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Developing a Comprehensive Quality Model in Higher Education: Medical
Employers' Perspective

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A thesis submitted for the degree of Doctor of Philosophy
School of Education
Durham University
April 2022

ABSTRACT

In higher education, quality management has been introduced to regulate the overall performance of institutions. In Saudi Arabia, less than 50% of employers believe that educational systems succeed in preparing students for the marketplace (Collet, Hine, & Plessis, 2015; Damoah, Peprah, & Brefo, 2021; Gallagher, 2015). This lack of preparedness may have resulted in poor employment rates, particularly among medical graduates. In order to reduce unemployment among medical graduates, employers need to be involved in developing a holistic understanding of these issues and a subsequent quality model of medical education that is relevant to the labor market so that it closes the gap between higher education and the medical labor market. The aim of this study is to gain insights into how medical employers conceptualize quality in higher education. The objective is to develop a model of the quality of medical education at Saudi universities from the perspective of employers. The resulting model will take account of both the attributes of medical graduates and the universities themselves.

The study utilizes an exploratory two-stage design: semi-structured interviews followed by a survey. Interviews were carried out with 14 employers from six hospitals. The survey sample size is 251 respondents. The resulting quality model consists of seven dimensions, namely: 1) Educational Experience, 2) Medical Training, 3) Scientific Research, 4) University Reputation, 5) Pedagogic Quality, 6) Administrative Quality and 7) Graduate Quality. Additionally, the findings show that employers value eight soft skills in medical graduates: commitment to work, communication, decision making, continuous learning, confidence, ability to work under pressure, time management, and self-improvement skills.

This model will create enhancement opportunities for medical education to overcome the deficiencies that lead to less competent graduates and it has the potential to enhance the higher education system.

KEYWORDS:

Medical education, employers, quality model, quality attributes, graduate employability.

TABLE OF CONTENTS

ABSTRACT	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
ACKNOWLEDGMENTS	xi
CHAPTER 1 INTRODUCTION	1
1.0 Introduction	1
1.1 What is Quality?	2
1.1.1 Quality in higher education	3
1.2 Employers as Key Stakeholders in HE	5
1.3 Research Problem: Measuring Employers' Perspectives of the Quality of Higher Education: Proposing a Quality Model	7
1.4 Research Aims, Objectives and Questions	9
1.5 Structure of the Thesis	11
1.6 Chapter Summary	12
CHAPTER 2 THE CONTEXT OF THE STUDY	14
2.0 Introduction	14
2.1 Medical Education in Saudi Arabia	15
2.1.1 Saudi Arabia vision 2030	17
2.2 Quality Management in Medical Education	19
2.3 Unemployment Among Saudi Medical Graduates	29
2.4 Healthcare System in Saudi Arabia	31
2.4.1 Quality of healthcare institutions	32
2.5 Chapter Summary	33
CHAPTER 3 LITERATURE REVIEW	35
3.0 Introduction	35
3.1 Service Quality in Higher Education	36
3.2 Models of Quality in Higher Education	39
3.3 Quality Attributes in Higher Education	45
3.3.1 Quality attributes in higher education in general	46
3.3.2 Quality attributes in medical education	52
3.4 Quality Attributes of Graduates	57
3.4.1 Quality attributes of graduates in general	57
3.4.2 Quality attributes of medical graduates	64
3.4.3 Competency frameworks in medical education	68

3.5 Chapter Summary	71
CHAPTER 4 RESEARCH METHODOLOGY	73
4.0 Introduction.....	73
4.1 Research Paradigm.....	73
4.2 Research Design.....	75
4.2.1 Gaining access and sample selection	77
4.3 Stage 1: Semi-structured Interviews	77
4.3.1 Interview data collection process.....	78
4.3.2 Avoiding interview bias	80
4.3.3 Interview sampling technique	81
4.3.4 Interview participant sample	82
4.3.5 Interview qualitative data analysis: thematic analysis	84
4.4 Stage 2: Survey	87
4.4.1 Survey data collection process.....	87
4.4.2 Questionnaire design and pilot study	88
4.4.3 Survey sampling.....	90
4.4.4 Survey quantitative data analysis: exploratory factor analysis	92
4.5 Validity and Reliability	94
4.5.1 Validity and reliability of qualitative data	94
4.5.2 Validity and reliability of quantitative data	94
4.6 Ethical Considerations	95
4.7 Methodological Limitations.....	97
4.7.1 Participant recruitment	97
4.7.2 Interview data collection.....	98
4.7.3 Questionnaire design and data collection.....	100
4.8 Chapter Summary	102
CHAPTER 5 INTERVIEW FINDINGS 1: QUALITY OF MEDICAL EDUCATION.....	104
5.0 Introduction.....	104
5.1 Theme 1: University Administrative Quality.....	105
5.1.1 Infrastructure.....	106
5.1.2 University Rules and Regulations.....	110
5.2 Theme 2: Educational Quality	113
5.2.1 Teaching quality.....	114
5.2.2 Faculty member quality	119
5.2.3 Medical training	122
5.3 Theme 3: Scientific Research and Engagement Culture.....	127
5.3.1 Scientific research.....	128

5.3.2 Community service	131
5.3.3 Collaboration with stakeholders.....	133
5.4 Theme 4: University Reputation	141
5.4.1 International activity	142
5.4.2 Graduate performance in the labor market.....	144
5.4.3 World ranking	146
5.4.4 Academic accreditation.....	148
5.5 Chapter Summary	151
CHAPTER 6 INTERVIEW FINDINGS 1: MEDICAL GRADUATE QUALITY	153
6.0 Introduction.....	153
6.1 Theme 1: Graduate Employability	154
6.1.1 Soft skills	155
6.1.2 Practical skills	166
6.1.3 Graduate competency.....	170
6.2 Theme 2: Graduate Readiness.....	180
6.2.1 Employment readiness	181
6.2.2 Career orientation.....	186
6.3 Theme 3: Research and Engagement Experience	189
6.3.1 Research productivity	190
6.3.2 Interaction with the community	194
6.4 Chapter Summary	196
CHAPTER 7 SURVEY FINDINGS	197
7.0 Introduction.....	197
7.1 Sample Population	197
7.1.1 Employers' sample size	197
7.1.2 Employers' demographic data	198
7.2 Reliability Analysis of the Questionnaire	204
7.2.1 Cronbach's Alpha	204
7.2.2 Means and standard deviation.....	206
7.3 Correlation Analysis (Pearson's Correlation)	207
7.4 Exploratory Factor Analysis (EFA)	211
7.4.1 Appropriateness of factor analysis (KMO analysis and Bartlett's test of sphericity)	211
7.4.2 Research question 1: higher education quality factors.....	213
7.4.3 Research question 2: Medical graduate quality factors.....	224
7.5 Validity of the New Set of Factors.....	229
7.5.1 Convergent validity.....	229
7.5.2 Discriminant validity.....	230

7.6 Analysis of the Multiple-choice Questions	230
7.7 Analysis of the Open-ended Question	233
7.8 Chapter Summary	234
CHAPTER 8 DISCUSSION AND CONCLUSION.....	236
8.0 Introduction.....	236
8.1 Discussion of the Research Outcomes	236
8.2 Model of Quality in Medical Education	238
8.2.1 Administrative quality.....	240
8.2.2 Educational experience	241
8.2.3 Pedagogic quality.....	243
8.2.4 Medical training	244
8.2.5 Scientific research and engagement	246
8.2.6 University reputation.....	247
8.3 Model of Quality of Medical Graduates	249
8.3.1 Employment readiness	250
8.3.2 Medical comprehension	253
8.3.3 Research and engagement.....	254
8.4 The Model of Quality in Higher Education: Employers' Perspective	255
8.4.1 Implications of the study.....	257
8.4.2 Limitations of the study	259
8.4.3 Recommendations for future research	260
8.5 Conclusion	261
REFERENCES.....	263
APPENDICES	284
Appendix A: National Qualification Framework Domains and Skills	285
Appendix B: Quality Models in Higher Education.....	288
Appendix C: Interview Schedule	292
Appendix D: Example of a Transcribed Interview	294
Appendix E: Online Questionnaire	303
Appendix F: Reliability Test Results for the Piloted Questionnaire.....	324
Appendix G: Invitational Message to the Questionnaire	328
Appendix H: Cycle of Data Thematic Analysis	330
Appendix I: Ethics Approval from Durham University and Imam Abdulrahman Bin Faisal University.....	332
Appendix J: Interview Consent Form and Participant Sheet	335
Appendix K: Exploratory Factor Analysis – Quality of Medical Education.....	338

Appendix L: Reliability Test for Extracted Factors – Quality of Medical Education	403
Appendix M: Exploratory Factor Analysis – Quality of Medical Graduates	430
Appendix N: Reliability Test for Extracted Factors – Quality of Medical Graduate	452

LIST OF TABLES

Table 1: Number of Universities and Medical Colleges in Saudi Arabia	18
Table 2: Minor Changes in the NCAAA Quality Standards from 2009 to 2022.....	20
Table 3: The SaudiMeds Framework Domains and Skills	27
Table 4: Size of Medical Workforce and Percentage of Saudis in Saudi Arabia	30
Table 5: Number of Hospitals/Beds in Health Care Sectors in Saudi Arabia.....	32
Table 6: Quality Dimensions and their Corresponding Characteristics in HE	40
Table 7: Quality Models in Higher Education	41
Table 8: Competency Frameworks in Medical Education.....	69
Table 9: Profile of Interview Participants	83
Table 10: Demographic Data of the Questionnaire Participants.....	198
Table 11: Cronbach's Alpha Value for Every Construct.....	205
Table 12: Mean and Standard Deviation Values	206
Table 13: Correlation Analysis – Pearson's Correlation Values	210
Table 14: KMO and Bartlett's Test – Medical Education Quality	212
Table 15: KMO and Bartlett's Test – Medical Graduate Quality	213
Table 16: Total Percentage of Variance and Cumulative – Medical Education Quality	213
Table 17: Factor Loading – Medical Education Quality.....	214
Table 18: Excluded Variables – Medical Education Quality.....	217
Table 19: Extracted Factors – Medical Education Quality	219
Table 20: Factors Retained – Medical Education Quality	222
Table 21: Total Percentage of Variance and Cumulative – Medical Graduate Quality	224
Table 22: Factor Loading – Medical Graduate Quality	225
Table 23: Excluded Variables – Medical Graduate Quality	226
Table 24: Extracted Factors – Medical Graduate Quality.....	227
Table 25: Factors Retained – Medical Graduate Quality.....	228

LIST OF FIGURES

Figure 1: Timeline of the Evolution of Quality Management in Medical Education	20
Figure 2: Quality Attributes of Higher Education: Themes and Categories.....	105
Figure 3: Administrative Quality Theme, Categories and Codes	106
Figure 4: Educational Quality Theme, Categories and Codes.....	114
Figure 5: Research and Engagement Culture Theme, Categories and Codes	128
Figure 6: University Reputation Quality Theme and Categories	141
Figure 7: Quality Attributes of Medical Graduates: Themes and Categories.....	154
Figure 8: Graduate Employability Theme, Categories and Codes	155
Figure 9: Graduate Readiness Theme, Categories and Codes	180
Figure 10: Research and Engagement Experiences Theme, Categories and Codes.....	190
Figure 11: Gender of Participants.....	201
Figure 12: Nationality of Participants.....	201
Figure 13: Workplace of Participants	202
Figure 14: Work Experience of Participants.....	202
Figure 15: Professional Rank of Participants	203
Figure 16: Country of Medical Degree.....	203
Figure 17: Previous Work Experience.....	204
Figure 18: University Practices to Build a Good Reputation	231
Figure 19: Employers' Preferences in their Involvement in Higher Education	232
Figure 20: Essential Soft Skills for the Medical Labor Market.....	233
Figure 21: Quality Model of Medical Education from the Perspective of Employers	255

LIST OF ABBREVIATIONS

AHP	Analytical Hierarchy Process
CBAHI	Saudi Central Board for Accreditation of Healthcare Institutions
CODA	The Commission on Dental Accreditation
EFA	Exploratory Factor Analysis test
ENQA	The European Association for Quality Assurance
GCC	Gulf Cooperation Council
GMC	General Medical Council
GPA	Grade Point Average
HE	Higher Education
HEdPERF	Higher Education Performance
HEI	Higher Education Institution
JCI	American Joint Commission International
KMO	Kaiser-Meyer-Olkin
MoE	Ministry of Education
MoH	Ministry of Health
MoHE	Ministry of Higher Education
NCAAA	National Center for Academic Accreditation and Assessment
NQF	National Qualification Framework
SCFHS	Saudi Commission for Health Specialties
SERVPERF	Service Performance
SERVQUAL	Service Quality
WFME	World Federation for Medical Education
WHO	World Health Organization

ACKNOWLEDGMENTS

Firstly, I thank God for his guidance and strength throughout the research process.

I would like to express my deep and sincere gratitude to my research supervisor, Professor Julie Rattray for her advice, guidance, and thoughtful comments throughout every stage of the study. I would like to sincerely thank her for her tremendous support and encouragement for my participations in conferences and publications of an article and book chapter. I also offer profound gratitude to my second supervisor Doctor Rille Raaper for her support and encouragement during the progress of this work. I am deeply grateful to both for their academic guidance and advice. Their thoughtful advice and comments helped transform my research and me as a researcher.

Completing this work would have been far more difficult without the continued support and encouragement of my husband Ahmed, who has always stood by me. I would like to express my thanks for his genuine support and understanding throughout my PhD journey. I am also grateful for having my son Abdulrahman during the work of this research; this made it more difficult but so much better. I am also extremely grateful to my parents, sisters, and brothers, who have always supported and encouraged me with their prayers. I would also extend my thanks to my friends for their constant encouragement and wishes.

I also want to express my appreciation to all the participants of this study for the time they spent in participating in the interviews and/or survey.

Finally, this work is a big step toward achieving my dreams and career goals. I would like to express my grateful thanks and appreciation to everyone who has supported me in the completion of this work.

This research is dedicated to my parents, husband, and son Abdulrahman, who are the joy of my life.

CHAPTER 1 INTRODUCTION

1.0 Introduction

This study investigates how employers in the medical labor market view quality in higher education (HE). Quality management has received considerable attention in recent years. It can be traced back to the manufacturing industry and was subsequently introduced into other sectors, including, more recently, education (Kundu, 2016). There is no single definition of quality in the literature, which could be due to the fact that the perspectives of stakeholders vary widely over how to conceptualize quality in HE. This has led to extensive debate in the literature, which, in turn, has led some to view the term negatively. Ultimately, this friction about the term itself and whether it should even be applied in HE has become something of an obstacle to attempts to clarify it in a way that meets the diverse needs of a wide range of stakeholders (Kundu, 2016). Indeed, it is crucial to understand what quality is before gaining an insight into how stakeholders conceptualize quality. The debate over the definition of quality implies that different groups of stakeholders with different needs yield different conceptions of quality in HE. This study focuses on medical employers' perceptions of what constitutes high-quality medical education that will adequately prepare high-quality medical graduates.

This chapter sheds light on definitions of quality in the literature, particularly in HE. According to Tam (2001), each stakeholder in HE has a different perception of quality based on their specific needs and expectations of what constitutes quality in HE. These stakeholders are categorized into internal, such as students, faculty members and staff, who use the service directly, and external, such as governments, employers, policy makers and others who are indirectly involved in HE. This chapter explores the views of these stakeholder groups, with a particular emphasis on employers.

Section 1.1 considers the wide range of definitions of quality in general and in HE in particular. One of the reasons for the varied perceptions of quality is perhaps the number of stakeholders involved in HE (see Section 1.2). Because this study targets employers in order to understand how they conceptualize quality in HE, this stakeholder is given particular emphasis (see Section 1.2). In Section 1.3, the research problem is elaborated on, in order to set out how the study addresses the existing gaps in the literature in terms of employment and

employers. These considerations provide the basis of the study. The research's aim, objectives, and questions are presented in Section 1.4. Section 1.5 provides an overview of the structure of this thesis and finally Section 1.6 concludes the chapter with a brief summary.

1.1 What is Quality?

Quality in HE has been the subject of intense interest in recent years. However, HE consists of numerous stakeholders who provide various services and have different expectations of what goals education should meet; because of this, they perceive quality differently. Before discussing quality in HE, this section provides an overview of how quality per se has been understood and defined.

Quality has been measured using various models, approaches, and evaluation methods, each with a different purpose. Indeed, stakeholders and their needs and expectations underpin the majority of quality definitions (Takalo, Abadi, Vesal, Mizaei, & Nawaser, 2013). Oakland (2004) defines quality simply as adherence to different consumer needs, adding that in order to succeed as an organization, it is essential to take into account and closely record consumers' requirements. Indeed, conducting research to study market needs and to establish an effective system of consumer feedback should lead to quality improvements (Oakland, 2004). In other words, having constant communication channels with a broad range of consumers plays a major role in elevating the performance of organizations.

In this section I consider four different approaches to quality: those of Astin (1980), Juran (1988), Garvin (1988), and Harvey and Green (1993). Astin (1980) proposes the following five elements of quality: mystical, reputation, resources, outcomes, and value added. Astin's (1980) 'value-added' principle stated that the quality of an institution can be perceived by looking at the different types of support available and accessible by stakeholders. He added that quality is in a way 'mystical' and evades a definitive definition due to the uncertainty present in different and diverse contexts.

Juran (1988) describes three aspects of quality: quality of design, quality of conformance, and quality of performance. Each of these factors should be fulfilled to achieve quality. The service and/or products need to be well designed, conforming to quality standards and performing its intended purpose. From this perspective, the quality of services and/or products must meet and exceed the needs and expectations of users. Feedback from users is therefore an essential component of quality. Indeed, Campell and Rozsnayi (2002) suggest

that quality is a continuous enhancement of a good rather than ceasing at a particular level of quality.

Garvin (1988) introduces four approaches to defining quality, namely, product-based, system-based, user-based and value-based. The product-based approach sees quality as the extent to which a product meets quality standards; system-based quality refers to the level of compliance with certain needs or requirements; user-based quality concerns the satisfaction of different users derive from the products provided by an entity; and value-based quality concerns cost-effectiveness, with a product having both a reasonable cost and a high level of quality.

Harvey and Green (1993) present five main principles for defining quality, namely, exceptional product/service, perfection, fitness for purpose, value for money, and transformation. ‘Exceptional’ quality is the stage of reaching excellence and providing unique services that are noticeably distinguishable from those of the competitors (Rowle, 1996). ‘Fitness for purpose’ in the definition of quality indicates that attainment of high quality is possible in relation to what consumers expect of quality products or services. The ‘value for money’ principle could be perceived as a demonstration of accountability to the government, who may be funding the institution, or to stakeholders, who, in some cases, are paying for the services they receive. Harvey and Green (1993, p. 24) introduced the principle of ‘qualitative change’ (or the ‘transformation principle’), which defines quality as the continuous improvement and progress of products and/or services.

1.1.1 Quality in higher education

Houston (2007) claims that the definition of quality was initially driven by the manufacturing sector where it refers mainly to the requirements of the end users of industrial products. The HE context differs significantly from the industrial context. This means that some of the quality definitions in general might not fit the HE context. Indeed, as Campell and Rozsnayi (2002) noted, high quality in the manufacturing sector could be achieved when the stage of zero errors is reached in making a product, which means perfectly adhering to specific standardization. However, in the context of HE, the notion of reaching zero errors does not apply.

Due to the complex nature of quality in HE, Becket and Brookes (2008) asserted that reaching an exact definition is problematic. HE consists of numerous stakeholders who have

various needs from an education system and who perceive quality differently. Tam (2001) and Barnett (1994) declared that quality in HE is perceived differently by different stakeholders, leading to different approaches to evaluating and measuring it. Quinn, Lemay, Larsen and Johnson (2009) claim that stakeholders receive different services from HE institutions, according to their specific interests. Barnett (1994) adds that this leads to a ‘power struggle’ where every stakeholder group fights for their voice to be heard.

Gilmore (1974) and Crosby (1979) posit that quality in education is the conformance of education output to planned goals, specifications and requirements. Crosby (1979) adds ‘defect avoidance’ to this definition. Peters and Waterman (1982) define quality as reaching excellence. However, excellence is a broad term that requires the stating of concrete descriptive standards if we are to understand what constitutes ‘quality’. Juran and Gryna (1988) define quality in education as the appropriateness of educational experiences to meet the purpose of HE. Parasuraman, Zeithaml and Berry (1985) state that quality in HE means to meet and exceed stakeholders’ expectations of HE. According to Parasuraman et al. (1985), in order to achieve quality, it is crucial to listen to the needs of stakeholders. Reaching stakeholders to understand their needs, expectations, and demands from HE systems will result in improved quality. Similar to Parasuraman et al. (1985), Ryan (2015) and Juran and Gryna (1988) suggest that in order to understand quality in HE, we need to identify and recognize the criteria of high-quality services set by stakeholders in higher education institutes (HEIs). For Ramsden (1992), quality in HE is the extent to which students understand the teaching materials.

To sum up, it can be clearly seen that defining quality in HE is complex, and the literature offers different meanings and explanations. Despite this, as noted here, studies have nevertheless settled on certain key principles and approaches that can be integrated into any broad definition of quality. Kundu (2016) summarizes the debate on defining quality in HE into three key elements, on which most studies agree: excellence, fitness for purpose, and value for money.

After elaborating on the definition of quality in the literature, it could be concluded that the ‘fitness for purpose’ proposed by Harvey and Green (1993) and Juran (1988), and the ‘meeting and exceeding expectations of stakeholders’ proposed by Parasuraman et al. (1985) and Juran and Gryna (1988), generally fit this study. Given that employment is one of the purposes of HE (see Section 1.2), employers were approached in this study to understand

what constitutes quality in medical education. Employers were involved as stakeholders in order to understand how they perceive quality in medical education and in medical graduates. Moreover, this research aims to understand how ‘fit’ HE should be to serve the purpose of preparing graduates for the labor market as well as how fit the graduates should be to meet the needs and expectations of the labor market.

Thus, the ‘fitness for purpose’ and ‘meeting and exceeding’ principles fit this study for two reasons: 1) there is an emphasis in this study on employment as a purpose of HE; and 2) medical employers, as a stakeholder group, were approached to understand their needs and expectations of HEIs and graduates are expected to meet the demands of employment in the modern labor market (see Section 1.3). In addition, the service quality approach used in this study comes under the ‘fitness for purpose’ principle, which is based on the aim to provide a level of quality that complies with consumers’ requirements and expectations (Rowley, 1996).

Therefore, in order to achieve and understand quality in HE, it is essential to understand the numerous stakeholders who have diverse perspectives, demands and expectations of HE and its purpose. In light of the wide range of stakeholders involved in HE, this study places emphasis on employers, who are as important as other stakeholders. As employers are a key stakeholder group, their voice and expectations should be actively incorporated into HE systems, as suggested by Juran and Gryna (1988). Therefore, employers’ participation in the evaluation of education quality is crucial as it ensures that they are satisfied with the services provided by HEIs and the skills of recent graduates, as seen in the next section.

1.2 Employers as Key Stakeholders in HE

Stakeholders in HE are groups that benefit from, receive, and provide the services offered by HEIs. Quinn et al. (2009) claim that stakeholders receive and provide different services from HEIs, based on their interests, and that their perception of the quality of HE depends on the services they receive. Internal stakeholders like students and faculty members receive educational services in the form of courses, research funds or administrative services. External stakeholders are prospective students and their families, the community, employers who recruit graduates, and agencies who are in charge of educational standards and regulations, among others.

Quinn et al. (2009) argue that fulfilling the needs of students, as the main stakeholders, requires expanding beyond students to involve many other stakeholders whose expectations are of equal importance. In other words, in order to ensure the satisfaction of students and meet their needs, other groups of stakeholders should be involved. The significance of other stakeholders' involvement might lie in the fact that students are not fully aware of their actual needs or do not know what is best for them. In this vision, students are seen as 'raw materials' that are developed and prepared by the HE process itself to meet the needs of employers (Quinn et al., 2009). Ultimately, these – and other – stakeholders strive to enhance the services used by students, who are seen as the *main* – but not the only – stakeholders.

Owen et al. (2015) suggest that educational reforms are driven by what is perceived as high quality by the wider society, which could be encompassed in the requirements of employers and not necessarily – or only – in the needs of students. In other words, the feedback of employers on the quality of HE could be more valuable than the feedback that students give. On their part, employers tend to favor graduates with high attainment in soft skills (Tam, 2001). On the other hand, students seek to earn high grades to ensure better employment opportunities. Students tend to avoid enrolling on challenging courses in order to achieve higher marks (Jauch & Orwig, 1997).

In 1991, a shift occurred in HE quality management toward targeting employers. It began in Europe, in the form of the launch of a new policy by the European Commission to close the gap between HE and employers' needs (Sin, Tavares, & Amaral, 2017). In other words, employers were targeted to take part in the reform of HE in order to align it with labor market needs so as to enhance the employment opportunities of graduates. This trend has become more global over time following the realization of the impact of centralizing employers' input and the value of their demands for society and economy. In Saudi Arabia, for example, the National Center for Academic Accreditation and Assessment (NCAAA) encourages HEIs to meet various good practice standards in order to involve employers in decision making and to build excellent and constant relationships with current and potential employers (NCAAA, 2018).

Indeed, Mazur (1996) describes society and the labor market as the 'ultimate customers' of HE. Employers, as external stakeholders, are a key element in the process of obtaining feedback pertaining to the level of university services provided, as well as being essential beneficiaries of education. The view that shortcomings in HE could have a detrimental effect

on students' employability became more prominent lately. Shah, Grebennikov and Nair (2015) claim that involving employers in HE is beneficial as it ensures that HE is aligned with the changing needs of the labor market and, moreover, that the curriculum remains up to date to meet the constantly and rapidly changing demands of the modern labor market. In addition, employers' feedback to HEIs could be used to produce graduates with the skills most valued in the marketplace (Shah et al., 2015).

Given the debate on the purpose of HE, several studies have proposed that preparing graduates for the labor market is one of the purposes of HE (Barnett, 1992; Sin et al., 2017; Tomlinson, 2007; Watty, 2006). Indeed, several suggestions for the actual purpose of HE have been presented in the literature. Barnett (1992) suggests two separate viewpoints on the purpose of HE: internally, associated with the educational process; and externally, linked to the labor market and access to employment. For Barnett (1992), the internal purposes concern students' development and the learning/teaching process. He suggested four purposes of the internal element of HE: learning for life, developing students' integrity, establishing intellectual abilities, and developing critical reasoning. From the perspective of the external aspect of HE, Barnett (1992) proposes that one of its purposes is to produce graduates for the labor market and researchers to advance the frontiers of knowledge.

Similarly, Sin et al. (2017) discuss a shift in the purpose of HE, claiming that employability is central, for the sake of wider economic progress. This aligns with the Saudi Vision 2030 where HE is seen as a means of elevating economic growth in the country (Saudi Vision 2030, 2018). Watty (2006) adds that HE serves the role of producing graduates that are highly qualified for the workplace. Therefore, employment is of central importance in the changing relationship between HE and the labor market (Tomlinson, 2007). This supports the beliefs that in HE, employers are as important stakeholders as any others. In spite of the fact that employment is one of the purposes of HE, employers are the ultimate source of feedback on whether HEIs and their graduates are fulfilling the requirements of employment. Understanding and meeting the needs and expectations of employers with regard to HE and graduates would ultimately mean better employment opportunities for the latter.

1.3 Research Problem: Measuring Employers' Perspectives of the Quality of Higher Education: Proposing a Quality Model

Although scholars have asserted that employment is one of the purposes of HE (Sin et al., 2017; Watty, 2006), worldwide, employers have complained that contemporary HE produces

graduates who lack the necessary skills and attributes for their jobs (De la Harpe, Radloff, & Wyber, 2000). This has opened up a gap between these two sectors in terms of what is demanded and what is supplied. Studies worldwide have found that the proficiency level of graduates does not meet the needs of the labor market, with low satisfaction rates reported by employers (Collet et al., 2015; Damoah et al., 2021; Direito, Pereira, & de Oliveira Duarte, 2012; Gallagher, Cooper, Collins, & Shahir, 2015; Matheson & Matheson, 2009). Studies connected low employment rates to the misalignment between what is taught in HE and employers' expectations (Asma & Lim, 2000; Singh, Thambusamy, Ramly, Abdullah, & Mahmud, 2013; Wong & Hamali, 2006; Yogeswaran, 2005). In 2014, only 16% of employers in Gulf Cooperation Council (GCC) countries believed that HE was preparing students with skills aligned with labor market needs (Gallagher et al., 2015).

Failure to adhere to the requirements of the labor market is likely to have a detrimental impact on graduate employability. Indeed, inconsistency between employers' skill priority and instructors' beliefs about what constitute essential employability skills has been identified and seen as a factor contributing to graduate employability (Singh et al., 2013). Moreover, Issa and Siddiek (2012) claimed that 65% of workers had to enroll in additional courses during and even *after* their university studies in order to secure their current jobs.

In addition, the misalignment between HE and the labor market addressed above has possibly played a role in falling employment rates. This concern is apparent globally, but particularly in Saudi Arabia, where unemployment rates have recently been reported as high, around 11.3% in 2021 (General Authority for Statistics, 2021) (see Chapter 2). Moreover, Saudi medical graduates are being neglected by employers in favor of non-Saudis to fill vacancies in Saudi hospitals. According to the General Authority of Statistics (2020) only 43.8% of workers in the medical workplace are Saudis (see Chapter 2). In this regard, as demonstrated by a number of researchers, employers are essential stakeholders in HE, and their satisfaction and needs are crucial for bridging the gap between HE and the labor market (Archer & Davison 2008; Clarke, 2017; Sin & Neave, 2016). Therefore, there is an urgent need to target employers and strive to provide a new model of quality in HE in order to beat the unemployment crisis.

Reviewing the literature on measuring service quality from the perspective of external stakeholders reveals that many available studies in this respect are inadequate (see Chapter 3). Sultan and Wong (2010) assert that studies pertaining to service quality are indeed

limited. In light of the available studies, the majority of quality models were developed from the perspective of academics and/or students, the internal stakeholders of HE (AlAamri, Jani, & Zubairi, 2020; Hossain & Hossain, 2019; Noaman, Ragab, Madbouly, Khedra, & Fayoumi, 2017; Teeroovengadum, Kamalanabhan, & Seebaluck, 2016). Given the lack of employers' input on developing quality models in HE, most quality work in the literature focuses on the learning and teaching aspects of HE (Galeeva, 2016; Silva, Hermínio, de Moraes, & Kanashiro Makiya, 2017) and thus they lack a comprehensive perspective.

Therefore, this study aims to contribute to enhancing medical education, particularly pertaining to its role in producing employable graduates. This study thus bridges the gap in the literature about employers' perspectives of the quality of medical education. As a result, and unlike the currently available service quality instruments, the current study will address the attributes that employers identify in medical education and new graduates. For this purpose, a new quality model will be created, in accordance with HEdPERF (Higher Education Performance), to capture the perspectives of this distinctive group of stakeholders. Although this study is similar to others in formulating a new model of quality in HE, the aim is to shift the target assessors of service quality from internal stakeholders (such as students) to external stakeholders (in particular, employers) since the literature on quality models from the perspective of employers is limited. The dimensions and attributes of this model are taken from the perspective of employers, making the study unique in the field of HE.

The study thus contributes to our understanding of how universities can achieve their goal of becoming globally highly reputable institutions of education. Generally, the results of the model will constitute a step forward in acknowledging a wider range of HE standards. It will also provide information to university administrations about how various quality dimensions influence employers' satisfaction. This study could thus play a major role in the implementation of enhancements in universities in order to encourage their growth and development. In addition, the proposed model will create enhancement and development opportunities for HEIs, and they will constitute a basis from which to overcome the current deficiencies that lead to poorly equipped graduates entering the labor market. Doing so will provide an opportunity for HEIs to close the gap identified between employees' needs and the current supply of graduate skills, ensuring alignment between the needs of the labor market and HE outcomes.

1.4 Research Aims, Objectives and Questions

Given the limitations in the literature with regard to exploring employers' perspectives of the quality of medical education and medical graduates, the primary aim of this study is to generate insights into how employers of medical graduates perceive quality in HE. The objective of this study is to develop and validate a new model of quality in HE based on employers' opinions about the quality of medical educational services currently prevailing in Saudi universities. This model is developed in accordance with the HEdPERF instrument of service quality. In contrast to existing studies on HEdPERF, this model will be built based on the needs and expectations of current medical employers in Saudi Arabia. Additionally, the attributes of both medical students and universities will be examined and compared with the needs and expectations of employers to determine which of these attributes are most valued by them.

The research will thus seek answers to the following questions:

1. How do medical employers perceive and explain quality in HE?
2. What are the quality attributes that make an excellent medical graduate, from the perspective of medical employers?

There is an urgent need to understand what medical employers consider to be the crucial attributes of medical graduates and what they see as good-quality medical education. Thus, the study targeted employers of medical graduates working at both private and public hospitals in Saudi Arabia, to gain their perspectives on these two concepts. Interviews took place to understand the employers' perspective, then a survey was conducted to capture the perspectives of a greater population of the medical employers in Saudi Arabia. The study shows what the quality attributes of medical education and medical graduates are from the perspective of medical employers. Such an investigation made it possible to develop a comprehensive and novel model of medical educational quality from the perspective of employers. The proposed quality model consists of the quality attributes of both medical education and medical graduates.

Given the limitations in the current understanding of quality in HE from the perspective of employers, this study is significant in that it will bridge this gap in the literature. The study will shed light on the perspective of medical employers regarding what constitutes quality in medical education. This understanding will serve as enhancement opportunities for HE in

general and medical education in particular. These opportunities are seen from a different perspective (medical labor market) than in the current literature.

1.5 Structure of the Thesis

To meet its set aims and seek answers to the given research questions, this thesis comprises eight chapters. Chapter 1 has provided a general overview of the research context and set out the study's rationale, aims, objectives, and research questions.

In Chapter 2, the context of the study is discussed. The medical education system in Saudi Arabia is explained, including its history and admission criteria, and its involvement in achieving Saudi Vision 2030. The chapter also sheds lights on the medical labor market in Saudi Arabia and it emphasizes the low Saudi practitioner ratio compared to that of international practitioners in the country, despite the fact that the unemployment rate of Saudi medical graduates is concerning.

Chapter 3 reviews the literature. As the aim of this study is to explore the quality attributes of HE and of medical graduates from the perspective of employers, the literature review is divided into three major parts. Part 1 pertains to existing studies on quality models in general, part 2 focuses on the quality attributes of HE and medical education from different perspectives, and part 3 focuses on the quality attributes of medical graduates from different perspectives.

In Chapter 4, the methodology of the study is extensively explained. An exploratory mixed-method research design is adopted, using semi-structured interviews, followed by a survey. The rationale for the selection of this research design and methods is discussed in this chapter. As the study includes both quantitative and qualitative elements, the chapter is divided into three major parts. Part 1 discusses the factors that influenced most of the methodological decisions, along with the research design and research population. Part 2 covers the interview phase, and part 3 covers the survey phase. Parts 2 and 3 include the development of the data collection instrument, the analysis of the data generated, and the validity and reliability of that data.

In Chapters 5 and 6, the qualitative findings generated from the interviews are analyzed through thematic analysis, using NVivo. As the amount of data generated from the interviews was large, a decision was made to split the qualitative findings into two chapters. Chapter 5 covers the quality attributes of medical education, and Chapter 6 presents the quality

attributes of medical graduates. This was done to provide convenient readability and some structure to the qualitative findings.

The extensive literature review, along with the interview findings (Chapter 5 and Chapter 6), form the basis for the questionnaire used in the survey (Chapter 7). In Chapter 7, the quantitative results generated from the survey are analyzed by conducting exploratory factor analysis using SPSS. After a brief overview of the sample size and a detailed analysis of the survey data, the validity of the reliability of the analyzed data is considered. The presented survey results provide valuable information that helps to achieve the objectives of this study and the proposal of a new quality model.

In Chapter 8, a decision was made to incorporate the discussion and conclusion of the study into a single chapter. This chapter is therefore divided into two major parts: a discussion, followed by a conclusion. There is an extensive discussion of the survey results in the context of the literature. The literature review places the findings of this study in a wider context and shows how the proposed quality model in this study contributes to the literature in the field. This discussion yields the development of the quality model of medical education from the perspective of employers. The conclusion part illustrates the quality model's dimensions and attributes. Finally, the implication and limitations of the study are considered and some suggestions for further research are made.

1.6 Chapter Summary

One of the main purposes of contemporary HE is the production of qualified graduates for the labor market. Whilst I acknowledge that this is a contentious point (Barnett, 1992), significant consideration has been given to HE as a place for students to develop and hone their employability skills. Although this is a controversial idea which some scholars contest, given the demand for competent graduates and the need to gain employment, serious consideration of graduates' attributes is essential. The issue of employability is particularly salient where the educational program relates to professional occupations such as medicine.

However, in practice, HE has been criticized for producing graduates that are ill prepared for the labor market (Collet et al., 2015; Damoah et al., 2021; Direito et al., 2012; Gallagher et al., 2015; Matheson & Matheson, 2009), creating a gap between education providers and future employers. In particular for this study, this gap appears to open up widely in the medical labor market in Saudi Arabia (see Chapter 2). This gap actually triggered the researcher to conceive this study and it shaped the overriding aim to approach employers to

understand how they conceptualize quality in medical education and medical graduates. Ultimately, a comprehensive quality model consisting of the quality attributes of medical education and graduates is proposed, aspiring to provide enhancement opportunities for medical education in Saudi Arabia.

CHAPTER 2 THE CONTEXT OF THE STUDY

2.0 Introduction

Formerly, in Saudi Arabia, primary and HEIs, in both the public and private sectors, were monitored and fell under the management of two separate ministries: the Ministry of Education (MoE) and the Ministry of Higher Education (MoHE). In 2015, King Salman issued a royal decree to merge these two ministries onto one single MoE to cover both sectors. Annually, education receives the highest percentage of Saudi's gross budget, at almost 20% of its total outlays. This indicates the considerable attention that the education sector receives from the government. This attention puts pressure on the MoE to constantly progress and develop the Saudi educational system.

King Saud University was the first university established in Saudi Arabia, in 1957 (Smith & Abouammoh, 2013). Since then, HE has continuously expanded and it continues to do so in the present time. All government universities are free of charge, whereas private universities charge quite high tuition fees (around 60,000 Saudi Riyals, which equals 12,000 British Pounds). In 2021, the government universities constituted 44.6% of all universities in Saudi Arabia, whereas the private universities constituted 55.4% (MoE, 2021) (see Section 2.1.1). Additionally, all universities in Saudi Arabia are open to both genders, except Princess Nora Bint Abdulrahman University in Riyadh, which is a female-only university.

In this study, emphasis is placed on medical education in Saudi Arabia. Indeed, medical education is relatively new in Saudi Arabia, and since it was first established it has triggered a rapid and massive growth of medical colleges across the country. Given this remarkable growth in the number of medical colleges, pressure is placed on the MoE to maintain levels of quality in medical education and in the training and skills of medical graduates. This study aims to understand how medical employers conceptualize both quality in HE and the quality of medical graduates. This chapter elaborates on the context of the study by describing contemporary medical education and the medical labor market in Saudi Arabia.

Section 2.1 explores how medical education was initiated and then grew rapidly in Saudi Arabia by describing medical educational systems, admission criteria and the plan to meet the goals of Saudi Arabia's national strategy for development, Saudi Vision 2030. The growth of medical education in Saudi Arabia triggered the Ministry of Education to implement a number of initiatives to manage and regulate the quality of medical education and graduates, as seen

in Section 2.2. Although quality measures are a considerable part of the delivery of HE in general and medical education specifically, Section 2.3 shows that unemployment rates are relatively high among graduates and that healthcare institution staff are predominantly international workers. Nonetheless, efforts have been made in several sectors to tackle this issue and raise the percentage of Saudis working in the medical labor market to 60%, as seen in Section 2.3 and Section 2.4, which detail the unemployment situation and healthcare systems in Saudi Arabia, respectively. Finally, the chapter ends with a summary of all the facts and figures pertaining to Saudi medical education and healthcare systems.

2.1 Medical Education in Saudi Arabia

Specific to medicine, the introduction of medical education in Saudi Arabia has gone through two phases. In the first phase, medical education was introduced in 1967. King Saud University, in Riyadh, was the first to announce the launch of a college of medicine in partnership with the London College of Medicine (Telmesani, Hani, & Zaini, 2011). This partnership was later terminated in 1979 (Al-Shehri et al., 2013). Before the emergence of medical education, Saudis tended to travel abroad to study medicine in countries such as Egypt, the UK, Germany, France, and the US. Indeed, these scholarship programs are still operating to complement the medical education system in Saudi Arabia. The first cohort of Saudi medical graduates was introduced to the Saudi medical labor market in 1969 (Al-Shehri et al., 2013). Following King Saud University, in 1975 two more medical colleges were established, at King Abdulaziz University, in Jeddah, and King Faisal University, in Dammam (Telmesani et al., 2011). Then, in 1980 and 1996 two more medical colleges were founded, at King Khalid University, in Abha, and Umm Al-Qura University, in Makkah. However, pressure on HE to introduce more medical colleges remained. At that time, there was still a high demand for Saudi physicians to replace international practitioners in the medical labor market (Telmesani et al., 2011) (see Section 2.3).

In the early years of medical education in Saudi Arabia, universities lacked continuing medical education opportunities for students, and graduates had to study abroad for specialization training until 1990 (AlShehri, 2012). This was a considerable drawback in medical education at that time. However, one positive aspect of that period was that it helped to generate a strong grounding for medical training and continuing education in Saudi Arabia. These were based on international models brought by those who were undertaking scholarships abroad. Indeed, the lack of continuing medical education programs in Saudi

Arabia was resolved in the second phase of medical education (Telmesani et al., 2011).

In the second phase of medical education in Saudi Arabia, the MoE took the initiative of developing more medical colleges to bridge the gap in the demand for trained Saudi physicians. Indeed, more colleges and universities were established, primarily by the MoE, with some falling under the auspices of other governmental authorities such as the National Guard and the Ministry of Health (Telmesani et al., 2011). Moreover, the second phase of medical education saw the involvement of the private sector in the delivery of medical education. In 2005, Ibn Sina Medical College, in Jeddah, was the first private medical college to be established in Saudi Arabia (AlShehri et al., 2013).

Initially, traditional teaching occurred in medical colleges, which had a deleterious effect on the medical graduates' learning (Telmesani et al., 2011). It was pointed out that the traditional approach to teaching was responsible for graduating poor students into the community. As a result, the medical educational system in Saudi Arabia was turned around and shifted to a more innovative style of teaching (Telmesani et al., 2011). Competency-based medical education is dominantly used for teaching the health profession (Zaini et al., 2011). Indeed, the majority of medical colleges in Saudi Arabia are currently adopting either a competency-based curriculum, an integrated curriculum, or both (Telmesani et al., 2011). Efforts are undergoing to develop a framework for medical graduates with the necessary competencies and skills. As a result, the SaudiMeds framework was developed (see Section 2.2.3). This framework helps to demonstrate the essential skills medical students should acquire based on the needs of the community, in order to assist with the designing of a competency-based and integrated curriculum (Zaini et al., 2011).

In Saudi Arabia, schooling is completed in 12 years, with the final two years divided into three tracks; Science, Humanities or Administrative. In addition, a number of schools are Islamic-specific schools, which have a heavy reliance on memorizing the Quran. Memorizing the Quran starts in Grade 1, followed by a humanities or administrative curriculum in the final three years of high school (Grades 10, 11 and 12). Only science track graduates are admitted to medical schools.

In Saudi Arabia, medical college courses are completed in six years, followed by an internship program lasting one full year (Telmesani et al., 2011). Like any other health profession degree, after completing a medical degree, graduates are expected to complete the

internship program – this is a graduation requirement. Internship programs are designed to identify a future workplace route for medical professionals and to provide training opportunities. Graduates who successfully complete these years, along with the internship program, will be awarded with a medical degree to work as a general practitioner in hospitals. Alternatively, the general medical degree enables medical graduates to continue with further studies and to pursue a medical specialization program. In the specialization programs, medical graduates work as residents in hospitals to be trained and prepared to work as a specialist physician.

Admission to the health sector track in Saudi universities is the first step toward entering a medical college. The admission to this track is subject to the attainment of three cumulative indicators. Admissions rely on high school grades, with a great emphasis on science subjects, a national aptitude test and a summative admission test on sciences, administered by the university to which the student is applying. Additionally, the admission procedure might include an entry interview at some universities (Telmesani et al., 2011). Some universities have established a health track preparatory year in which all students seeking health-related programs, including medicine, are enrolled. This year is used to evaluate the suitability of students for medical college. The overall grades obtained in this year are an additional criterion for admission to medical colleges (Al-Shehri et al., 2013).

2.1.1 Saudi Arabia vision 2030

Saudi Arabia is undergoing rapid improvements in order to meet the goals of the national strategic Vision 2030. Quite major changes are being implemented in all sectors of life, including HE. In 2010, Saudi Arabia was ranked 60th worldwide in terms of the developments taking place in HE. This ranking was released before the launch of Vision 2030, implying that the ranking is likely to be higher at the time of writing.

The World Health Organization (WHO) has set a worldwide recommendation to meet a physician-to-population ratio of 1:600 (AlShehri et al., 2013). The Saudi government devised an initiative to exceed this benchmark and to reach a 1:500 physician-to-population ratio, assuming 60% Saudization of the medical labor market by 2030 (AlShehri et al., 2013). These initiatives were set as part of the Saudi Vision 2030 program (Saudi Vision 2030, 2018). Indeed, Saudization is one of the key aspects of Vision 2030. The Saudization program itself triggered the expansion of medical education in Saudi Arabia (Telmesani et al., 2011). To hit the benchmark, the medical labor market will need 2,400 medical graduates

in 2020 and 3,070 medical graduates in 2030 (AlShehri et al., 2013). In order to reduce over-reliance on international workers in the medical labor market (see Section 2.2), the Ministry of Health is obligated to work to supply the medical labor market with 100,000 Saudi healthcare practitioners by 2030 (Saudi Vision 2030, 2018). Indeed, one report showed that there is a greater need for family medicine practitioners than for any other medical discipline in the country (Saudi Gazette, 2018). In 2019, 14,458 medical graduates were matriculated at both public and private universities (MoH, 2020). Vision 2030 and the Saudization program continue to challenge the medical colleges to admit more students so as to meet the stated aims for 2030 while maintaining high-quality services and professional graduates.

Currently, the public sector and the private sector work closely together to meet the goals of Vision 2030, along with the available strong scholarship programs. As seen in Table 1, by 2021 Saudi Arabia had 29 public and 36 private universities, as well as 26 public and nine private medical colleges (MoE, 2021). The private sector represents approximately 55% of all universities and 26% of all medical colleges in Saudi Arabia.

Table 1

Number of Universities and Medical Colleges in Saudi Arabia in 2021

Sector	Universities	Medical Colleges
Government/Public Sector – Ministry of Education	29	26
Private Sector	36	9
Total	65	35

The table shows how the private sector is contributing hugely to HE in general and medical education specifically. Its role underlies government efforts to prepare and train Saudi medical students to be equipped for the modern labor market. The private sector will assist the government with achieving Saudi Vision 2030 in terms of the physician-to-population ratio and Saudization aims.

2.2 Quality Management in Medical Education

Medical education has witnessed a significant boom in Saudi Arabia and neighboring countries. Saudi medical colleges and similar institutions have been fully engaged with quality management and accreditation since 1992, under the supervision of the Saudi Commission for Health Specialties (SCFHS) (AlShehri, 2012). In order to maintain and improve the quality of medical colleges, a number of committees have emerged to manage the delivery of medical education. The GCC Medical Colleges Dean's Committee was established in 1995 to manage medical education in GCC countries. They meet biannually to discuss new trends in medicine and opportunities to improve medical education in the region (Al-Shehri et al., 2013). Additionally, the Saudi Medical Dean's Committee was established in 1996. Figure 1 illustrates the timeline of the establishment of the various quality committees/commissions with the responsibility for managing quality in medical education over the years in Saudi Arabia. The last established center is the National Center for Academic Accreditation and Assessment (NCAAA) in 2004. The NCAAA has the responsibility for developing and reviewing quality standards in higher education. Table 2 shows the minor changes in the NCAAA quality standards set from 2009 to 2022.

The Saudi Medical Dean's Committee works closely with the GCC Medical Dean's Committee and with medical colleges in Saudi Arabia to ensure and improve the quality of these colleges (Al-Shehri et al., 2013). This committee includes medical college deans from different universities across Saudi Arabia. Their recent achievement was the launch of the SaudiMeds Framework, discussed several times in this study. This framework addresses the key outcomes of Saudi medical graduates that are desired by the contemporary labor market (see Section 2.2.3).

Figure 1

Timeline of the Evolution of Quality Management in Medical Education in Saudi Arabia

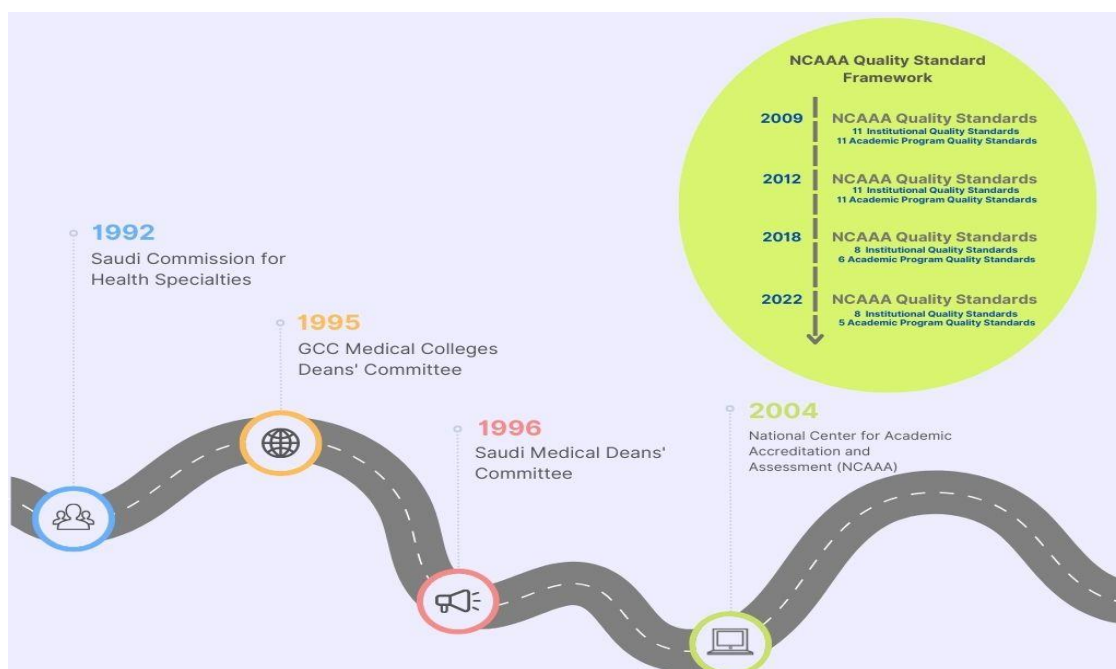


Table 2

Minor Changes in the NCAAA Quality Standards from 2009 to 2022

	Institutional Accreditation Standards	Program Accreditation Standards
2009	Standard 1: Mission Goals and Objectives Standard 2: Program Administration Standard 3: Management of Program Quality Assurance Standard 4: Learning and Teaching Standard 5: Student Administration and Support Services Standard 6: Learning Resources Standard 7: Facilities and Equipment Standard 8: Financial Planning and Management Standard 9: Employment Processes Standard 10: Research Standard 11: Relationships with the Community	Standard 1: Mission Goals and Objectives Standard 2: Program Administration Standard 3: Management of Program Quality Assurance Standard 4: Learning and Teaching Standard 5: Student Administration and Support Services Standard 6: Learning Resources Standard 7: Facilities and Equipment Standard 8: Financial Planning and Management Standard 9: Employment Processes Standard 10: Research Standard 11: Relationships with the Community

2012	Standard 1: Mission Goals and Objectives Standard 2: Program Administration Standard 3: Management of Program Quality Assurance Standard 4: Learning and Teaching Standard 5: Student Administration and Support Services Standard 6: Learning Resources Standard 7: Facilities and Equipment Standard 8: Financial Planning and Management Standard 9: Employment Processes Standard 10: Research Standard 11: Relationships with the Community	Standard 1: Mission Goals and Objectives Standard 2: Program Administration Standard 3: Management of Program Quality Assurance Standard 4: Learning and Teaching Standard 5: Student Administration and Support Services Standard 6: Learning Resources Standard 7: Facilities and Equipment Standard 8: Financial Planning and Management Standard 9: Employment Processes Standard 10: Research Standard 11: Relationships with the Community
2018	Standard 1: Mission, Vision, and Strategic Planning Standard 2: Governance, Leadership, and Management Standard 3: Teaching and Learning Standard 4: Students Standard 5: Faculty and Staff Standard 6: Institutional Resources Standard 7: Research and Innovation Standard 8: Community Partnership	Standard 1: Mission Goals and Objectives Standard 2: Program Management and Quality Assurance Standard 3: Teaching and Learning Standard 4: Students Standard 5: Faculty Members Standard 6: Learning Resources, Facilities, and Equipment
2022	Standard 1: Vision, Mission, and Strategic Planning Standard 2: Governance, Leadership, and Management Standard 3: Teaching and Learning Standard 4: Students Standard 5: Faculty and Staff Standard 6: Institutional Resources Standard 7: Research and Innovation Standard 8: Community Partnership	Standard 1: Program Management and Quality Assurance Standard 2: Teaching and Learning Standard 3: Students Standard 4: Faculty Standard 5: Learning Resources, Facilities, and Equipment

The SCFHS plays a major role in medical education in Saudi Arabia. The SCFHS works closely with universities, healthcare providers and the MoE to carry out its role. Its overriding mission is to ensure an effective delivery of outstanding medical teaching and learning experiences. Its responsibilities include:

1. Supervising training programs;
2. Establishing scientific boards for training programs;
3. Assessing and accrediting training locations (hospitals, medical centers, etc...);

4. Administering licensing examinations;
5. Evaluating healthcare workforce performances in the labor market.

As seen, the quality of medical colleges in Saudi Arabia is governed by several bodies in the country. As part of the process of governing quality in medical colleges, a licensing examination, run by the Saudi Commission for Health Specialties (SCFHS), is taken after graduation in order to assess students' overall attainment. The examination consists of two parts – a written part that examines their knowledge, and a practical to assess their psychomotor skills (Bajammal et al., 2008). Generally speaking, students would not value the skills unless they were assessed. The license therefore exists to assess the core specifications of health practitioners including medical graduates. It is compulsory for job and postgraduate study seekers to earn this license.

Moreover, in order to ensure and maintain a high-quality medical education and graduates, a number of measures have come into existence, including: the NCAAA standards; the National Qualification Framework; and the SaudiMeds Framework. Firstly, as elsewhere, quality management receives significant attention in HE in Saudi Arabia. As a result, the NCAAA was launched in 2004 by the Higher Education Council. Its purpose is to regulate and monitor the performance of HEIs, public and private, including those institutions that fall under the supervision of the MoHE or those that are regulated by other ministries or authorities. The center is responsible for providing academic accreditations following massive evaluations of each university's performance. AlShehri (2012) points out that accreditation is a first step in the journey of quality, one that ought to involve further steps to manage quality in medical education. However, he argues that quality management in medical education in Saudi Arabia is controlled by accreditation centers that merely aim to oversee achievements of accreditation with minimal consideration of quality improvement (2010). As he states: "Here is a danger of seeing quality as a destination (getting accredited) rather than a journey (culture of continuous improvement and innovations)" (2012, p. 78). Nonetheless, since the establishment of the center, academic accreditation has been compulsory in Saudi Arabia. The center grants accredited status to institutions that show high adherence to its standards after a comprehensive assessment of their performance. The accreditation decisions are categorized into either full accreditation for seven years, conditional accreditation for three years, or failing accreditation, after which institutions have to go through another accreditation process (NCAAA, 2021).

The quality that institutions are required to achieve is based on predetermined NCAAA standards regulating the academic, infrastructure, supportive services, research and community service aspects of HE (NCAAA, 2018). The NCAAA mandates fulfillment of eight quality standards, often called areas, ranging from educational processes to basic infrastructure and maintenance, in line with the standards that educational institutions across the world aim to achieve (NCAAA, 2018). These areas are broken down to form different dimensions, which in turn encompass a number of practices that indicate minimal good practice, and which institutions must comply with (NCAAA, 2018). Accreditation gives the impression of compliance to these standards in order to promote Saudi universities' qualifications and reputation in the public's mind. The NCAAA has launched two sets of standards, with relatively different and interrelated practices. One is specific to institutions and the other is for academic programs. The NCAAA standards were initially 11 in number, before being reduced to eight in 2018, namely:

- Standard 1: Mission, Vision, and Strategic Planning
- Standard 2: Governance, Leadership, and Management
- Standard 3: Teaching and Learning
- Standard 4: Students
- Standard 5: Faculty and Staff
- Standard 6: Institutional Resources
- Standard 7: Research and Innovation
- Standard 8: Community Partnership

(NCAAA, 2018)

The most powerful standards that influence the accreditation attainment decisions are Learning and Teaching, Research and Innovation, and Community Partnership, as per the NCAAA. Therefore, institutions usually pay attention to these three standards.

Standard One (Mission, Vision, and Strategic Planning Standard) covers the need to set mission and vision statements. Saudi universities are encouraged to reach an optimal level of distinguished learning experience and research productivity, and to deliver community services in order to serve the society in which they are located. These should be reflected in their Mission, Vision, and Strategic Plan.

Standard Two (Governance, Leadership, and Management) embraces the importance of the

leadership and governance ability of management. This may be achieved by complying with specific practices related to developing policies, processes and procedures for all aspects of the institution's services. In Saudi Arabia, universities tend to have separate campuses for females and males, for religious reasons related to Islamic beliefs. This unique and important characteristic that Saudi universities enjoy is also controlled by the NCAAA. This standard demands effective communication channels between the two campuses to ensure that they are aligned and serve their purpose. In addition, planning and decision making related to all aspects of the institution should be executed cooperatively between the two campuses, as per the requirements of standard two. Moreover, the quality assurance system is embedded in the management of the institution to administer the effective implementation of accreditation standards and requirements. All users are encouraged to participate in the quality system in terms of providing feedback on the services provided to them.

Standard Three (Teaching and Learning) is considered the core of NCAAA standards and it encompasses a lengthy list of good practices to adhere to. The learning outcomes of students are periodically evaluated and benchmarked against similar institutions/programs in order to inspire improvements and to prevent ossification of the same set of learning outcomes. Moreover, library and electronic resources are seen as enriching the learning and research experience of students and teaching staff and come under this standard. In addition, libraries have an obligation to expand their services, transcend existing physical learning resources and provide support by arranging multitask learning spaces that can be occupied in a variety of circumstances. In order to maintain a high level of user satisfaction, these facilities are evaluated by the user to determine development options.

Standard Four (Students) encourages the institution to establish policies to maintain a fair admission system as well as to maintain the confidentiality and security of student records. Students' rights and responsibilities are expected to be disseminated among students along with procedures for academic discipline and appeals. Students usually seek a significant amount of support, academic and career path advice from the institution so that they can enjoy their study experience. In addition to compulsory courses, students have the right to enroll on a variety of elective courses and activities not necessarily connected with their academic programs but appertaining to their needs.

Standard Five (Faculty and Staff) recommends that in order to optimize the experience of teaching and learning, the institution recruits highly qualified teaching staff. Additionally,

this standard introduces the appropriate approach to recruiting and retaining staff, including administrative and teaching staff. The institution is responsible for verifying the qualifications and experience of candidates preceding their official appointment, so as to protect the institution from any harm that could arise from fraudulent or fake applications. Moreover, the institution is obligated to establish training programs for all staff in order to continually develop their skills and keep them up to date. Institutions are required to establish policies on fair evaluation of all staff in order to identify outstanding staff who deserve to be appraised or, conversely, poor performers who need immediate attention and further development.

Standard Six (Institutional Resources) requires institutions to commit financial resources in order to ensure that sufficient funds are allocated to delivering its services. Budget management should take place every three years, including plans to overcome any possible risks that might arise at a certain point in time. Moreover, all manner of facilities that serve the delivery of teaching and learning, including classrooms, specific equipment, laboratories and technology, should be made available sufficiently and safely for all users. Facilities and equipment are supposed to be checked periodically and feedback should be obtained from users as a foundation for possible development opportunities. In addition to teaching and learning purposes, institutions are also responsible for establishing leisure and extra-curricular facilities for students and staff, including sports, food, and accommodation.

Standard Seven (Research and Innovation) encompasses good practices to encourage the institution to pay attention to research productivity and to ensure that all teaching staff and students participate in research. This includes the responsibility of the institution to establish effective and sufficient facilities and to give support to researchers and students. Additionally, policies and procedures are required to govern scholarly activities. To promote institutions' research, one of their main purposes, teaching staff are required to share and publish their research results and reflect on their teaching. If not, their promotion and annual evaluation could be negatively impacted. Finally, institutions are encouraged to establish an appropriate medium for teaching staff and students to create intellectual property for unique research studies and contributions to knowledge or manufacturing.

Standard Eight (Community Partnership) recommends that all internal stakeholders involved in the institution should participate in developing the community. In addition to internal stakeholders, prospective students and society also have the right to access information

regarding the purpose and services of the institution. This creates the need to develop policies and regulations to control the institution's contribution to community services and involvement in the media, to serve the specifications of this standard. This entitles institutions to promote their image and reputation.

Although males and females are separated in different campuses, as noted, both need to make efforts to adhere to the exact same standards. The NCAAA has high expectations of HEIs and it expects them to launch quality assurance systems that facilitate adherence to these eight standards. Demonstrating high compliance with these quality practices leads to full accreditation status for the university in question.

Secondly, as part of the NCAAA's functions, the National Qualification Framework (NQF) was formed to guide educators in the establishment of educational programs and the design of the curriculum. The NQF serves as a source for specifying a variety of programs at different degree levels. Additionally, the NQF has introduced three different learning outcome domains that every academic program has to cover when forming students' learning outcomes, namely: Knowledge and Understanding; Values, Autonomy, and Responsibility; and Skills (National Qualification Framework, 2020). Every domain breaks down into skills required for students at bachelor's degree level (see Appendix A).

In addition, tremendous effort is dedicated to establishing standardized qualifications for the majority of specialties in order to unify the graduate learning outcomes of Saudi Arabian institutions. This project is halfway to completion, with a list of four specialties in humanities, and it is expected to expand in the coming years (NCAAA, 2018).

Lastly, although there has been a shift to codifying the specification of medical graduates, it is probably essential to bear in mind that these specifications vary and depend on several factors. Whitehead, Kuper, Hodges and Ellaway (2015) state that specifications vary according to the culture and background of the patient that the health practitioner is dealing with. In this regard, medical colleges in Saudi Arabia are subject to a specifications framework in terms of graduates' skills and competencies. According to Telmesani et al. (2011), efforts are dedicated to developing medical curricula with attention given to the skills and competencies needed by a new health practitioner. However, efforts were made by a number of public universities to construct a competency-based framework for physicians, known as the SaudiMeds Framework. This is commonly considered progress in medical

curricula in Saudi Arabia as these skills are likely to be of more value to students because they are part of the curriculum and will be assessed. This framework consists of seven domains, which are further broken down into skills. The domains are: Doctor and the Practice, Doctor and Patient Care, Doctor and the Community, Doctor and Communication Skills, Doctor and Professionalism, Doctor and IT, and Doctor and Research (Zaini et al., 2011). Further discussion of this is presented in Chapter 3. Table 3 summarizes the core skills under every domain.

Table 3

The SaudiMeds Framework Domains and Skills (Source: SaudiMeds Framework, 2017, p. 12)

Theme 1: Scientific Approach to Practice	
The integration and application of basic, clinical, behavioral and social science in clinical practice	
• Integrate basic, clinical, behavioral and social sciences in medical practice. • Practice evidence-based health care.	
Theme 2: Patient Care	
The establishment and maintenance of essential clinical and interpersonal skills to demonstrate proficient assessment and delivery of patient-centered management.	
• Demonstrate the essential clinical skills. • Use clinical reasoning, decision making, and problem-solving skills in medical practice. • Manage patients with life-threatening medical conditions. • Formulate and implement appropriate management plans for patients with common medical problems. • Place patients' needs and safety at the center of the care process.	
Theme 3: Community-oriented Practice	
Healthcare practice is based on an understanding of the Saudi healthcare system and the application of health promotion and advocacy roles for the benefit and wellbeing of individual patients, communities, and populations.	
• Adhere to the regulations of the Saudi healthcare system in the Kingdom.	

• Advocate health promotion and disease prevention.
Theme 4: Communication and Collaboration
Effective communication with patients and their families and the practicing of collaborative care by working in partnership within a multi-professional team
• Effectively communicate verbally and in writing with patients, their families, colleagues, and other health professionals. • Practice teamwork and inter-professional collaboration. • Apply medical informatics in healthcare systems effectively.
Theme 5: Professionalism
The commitment to deliver the highest standards of ethical and professional behavior in all aspects of health practice, and take responsibility for one's own personal and professional development.
• Demonstrate the professional attitudes and ethical behaviors of physicians. • Apply Islamic, legal and ethical principles in professional practice. • Demonstrate the capacity for self-reflection and professional development.
Theme 6: Research and Scholarship
The contribution to the advancement of medical practice with the rigors of scientific research.
• Demonstrate basic research skills. • Critically appraise and demonstrate scholarly activities related to health science research.

This framework provides specific standards for all the key aspects of physicians' work that are required to successfully perform in the workplace. Caution was taken to allow the autonomy of medical colleges whilst delivering teaching and learning experiences. Nonetheless, the framework offers standards that colleges can take into consideration in curriculum design and evolution (Zaini et al., 2011). The major benefit of the competency-based framework is that it allows students who have gained the required skills, based on this framework, to easily adapt to the national and global environment. Care was taken to ensure that most skills are in accordance with the needs of both the internal and external perspectives of stakeholders. Medical colleges are expected to adhere to the specifications of this

framework, along with NCAAA compulsory standards, in order to demonstrate high-quality status.

2.3 Unemployment Among Saudi Medical Graduates

Unemployment is an everlasting issue that the Saudi government has sought to overcome since the discovery of oil. In the 1970s, the country witnessed rapid development and economic expansion due to high oil revenues (Al-Kibsi et al., 2015). This happened at a time when most Saudi citizens were uneducated and not skilled enough to do most of the jobs that the economic expansion created and demanded. Instead, the government relied on attracting international workers to fill the job vacancies (Al-Kibsi et al., 2015). However, one of the challenges produced by this overdependence on international workers at that time was a high unemployment rate among Saudis. To tackle this issue, the Saudi government established the Saudization program in 1970, which only really began in earnest in the mid-1990s (AlAsfour & Khan, 2013), to replace international workers with skilled and well-educated Saudi nationals.

Currently, despite the fact that large budgets have been allocated to enhance quality in HE and a growing number of accredited universities have been established, graduate unemployment remains an issue in Saudi society (Nair, 2017). The government spent 25% of its total budget (217 billion Saudi Riyals) on education in 2016 (MoE, 2016), but the Saudi youth unemployment rate was still the highest of all GCC countries (Gallagher et al., 2015). Records show that around 12,000 Saudi health practitioners were unemployed in 2018 (Arabian Business, 2018). According to AlWattan (2018), who released the outcomes of a conference organized on Saudi unemployment among health practitioners, some of the reasons behind the high unemployment rates are miscommunication between HE and the labor market – in both the private and public sectors – as well as the fact that fresh graduates lack practical training. In addition, the conference demonstrated that private sector employers tend to resist recruiting fresh Saudi graduates. Indeed, as Table 4 shows, the private sector workforce remains primarily composed of international workers.

Figures supplied by the General Authority for Statistics (2021) show that the unemployment rate of Saudis decreased in 2021 to 11.7%, compared to 12.6% in 2020. As part of Saudi Vision 2030, the government is committed to reducing Saudi youth unemployment to 7% by 2030 (Saudi Vision 2030, 2018). Initiatives by the Saudi medical establishment have successfully increased the number of Saudi physicians in the labor market, as shown in Table

4. The number of physicians has been gradually increasing since 2017, along with an increase in the number of Saudis joining the medical workforce. The increase is marked in all sectors. In 2020, Saudi nationals constituted 43% of all physicians working in healthcare institutions across all sectors (see Table 4). According to the data in the table, the percentage of Saudis entering the medical labor market has been gradually increasing since 2016, increasing from a ratio of 20% in 2013.

Table 4 also shows how the recruitment of Saudi citizens is worse in the private sector than in the public sector. Although the percentage of Saudis working in private healthcare providers has been increasing since 2016, the rate of 21.5% in 2020 was still low. Action is needed to deepen Saudization in the private sector. Generally, looking at the figures in the medical labor market in Saudi Arabia presented in Table 4, more work needs to be done to increase the involvement of Saudis in the medical labor market to meet the 60% target set forth in Vision 2030.

Table 4

Size of Medical Workforce and Percentage of Saudis Working in Different Health Care Sectors in Saudi Arabia, 2016-2020

Sector	2016		2017		2018		2019		2020	
	Number of Physicians	% of Saudis	Number of Physicians	% of Saudis	Number of Physicians	% of Saudis	Number of Physicians	% of Saudis	Number of Physicians	% of Saudis
Ministry of Health	39,180	28.8%	42,609	31.5%	45,571	36.7%	49,139	39.9%	50,065	50.6%
Other Government-all Sectors	15,879	48.7%	16,346	49.9%	18,155	51.3%	18,464	50.7%	20,234	55.4%
Private	20,681	2.5%	23,420	7.7%	24,297	8.1%	26,732	8.1%	25,037	21.5%
Total	75,740	25.8%	82,375	28.4%	88,023	31.8%	94,335	33.0%	95,336	43.9%

It is worth mentioning that the high unemployment rates could be due to several factors, including economics and rapid industrial changes. However, as related to the scope of this study, HE could also be blamed for this phenomenon and it is unwise to dismiss its contribution to the employment situation (Singh et al., 2013). Indeed, failing to fully prepare graduates for the labor market may negatively affect employers in terms of the massive amount of money and time spent training and reeducating graduates to fit into the workplace (Willis & Taylor, 1999). It is therefore the role of HE to take the initiative and detect a gap between HE and employers' requirements and, in turn, to devote efforts to narrowing it down. Indeed, academics in Saudi Arabia have rated employment rates as one of the top four dominant factors of distinguished universities (Kutbi & Hashim, 2017). Indeed, the employment rates of graduates are considered a core indicator of the quality of HE. This indicator must be calculated annually in order to accomplish a prestigious position in accreditation and ranking. Thus, the employment of graduates is an issue that should be given considerable attention in HE in Saudi Arabia.

2.4 Healthcare System in Saudi Arabia

Healthcare services provided in Saudi Arabia can be traced back to the foundation of the country in 1932 (Telmesani et al., 2011). The healthcare system is based on a two-tier system whereby both the public and private sectors work together to deliver appropriate healthcare services to the country. One limitation of the Saudi healthcare system is that specialist hospitals are located in the big cities only, such as Riyadh, Dammam, and Jeddah (Al-Shehri et al., 2013). Indeed, the healthcare system in Saudi Arabia is marked by an imbalance of services, especially in rural areas (Albejaidi & Nair, 2019).

The government is facing pressure to provide proper healthcare services to the population. This pressure increases with an annual population growth of 2.38% (MoH, 2020). Improvements in life expectancy also add pressure to the government, with the current 3.2% of the population above 65 projected to increase to 18.4% by 2035 (United Nations, 2019). These figures indicate that the government will need to work to add 20,000 more hospital beds to the healthcare system by 2035 to tackle the current and anticipated changes in the population (Oxfords Business Group, 2018).

Presently, the Ministry of Health is the major public provider of health services through its network of 287 healthcare institutions, providing 45,180 beds nationwide (MoH, 2020). In addition, other governmental authorities that provide healthcare services to the population are

the Security Forces, the Army, the National Guard, university hospitals, ARAMCO, the Red Crescent Society, and the Royal Commission for Jubail and Yanbu. These provide 50 hospitals offering 13,989 beds. Moreover, the private sector plays a major role in providing healthcare services through its network of 167 healthcare institutions, offering 78,596 beds across the country (see Table 5).

Table 5

Number of Hospitals/Beds in Different Health Care Sectors in Saudi Arabia, 2020

Sector	Beds	Hospitals
Government/public Sector – Ministry of Health	45,180	287
Other Governmental Sectors	13,989	50
Private Sector	19,427	167
Total	78,596	504
Rate of beds per 10,000 population	22.40	

2.4.1 Quality of healthcare institutions

Similar to academic accreditation, healthcare institutions go through the process of determining their compliance with predetermined quality standards in order to be granted accredited status. Under the auspices of the NCAAA, the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) was established in 2001 to accredit healthcare institutions (CBAHI, 2018). It is responsible for monitoring the performance of healthcare institutions and awarding accreditation. Currently, national accreditation by CBAHI is mandatory for all healthcare providers (hospitals, clinics, medical centers, etc.) in both the government and private sectors (CBAHI, 2018).

Although national quality-governing bodies have been recently introduced in HE and healthcare services, medical colleges and healthcare institutions were already aware of the

concept of quality management (AlShehri, 2012). In addition to national accreditation, some healthcare institutions in Saudi Arabia strive to gain international accreditation, such as that awarded American Joint Commission International (JCI) and others, in order to enhance their image and gain the trust of society.

Moreover, hospitals and other healthcare institutions were initially developed on the basis of available advanced international models, and their staff are regularly trained abroad in accordance with highly recognized models (Alshehri, 2012). Therefore, it is assumed that health profession employers are highly knowledgeable about quality and strategies, but the question is how they perceive quality in medical graduates and the discipline of HE, a question this study explores.

2.5 Chapter Summary

To sum up, healthcare services in Saudi Arabia have been provided since the foundation of the country in 1932 (Telmesani et al., 2011). The government was initially dependent on international practitioners to deliver healthcare services due to the scarcity of Saudi physicians. Indeed, medical education is relatively new in Saudi Arabia and was introduced in 1967, when King Saud University opened the first medical college (Telmesani et al., 2011). Since then, the government has been under pressure to supply the labor market with qualified Saudi physicians, and the country has witnessed a substantial expansion in the number of medical colleges. The private sector joined the government in providing medical education to bridge the gap due to the limited number of Saudi physicians in the labor market.

Nonetheless, unemployment rates are still considerably high among Saudi graduates. Currently, in the medical labor market, Saudi nationals constitute only 43.9% of all physicians in different sectors (MoH, 2020). Although the figures show that the number of Saudi physicians has increased since 2016, the government has a goal, as part of Vision 2030, to increase this number to 60%, adding 100,000 more Saudi healthcare practitioners to the labor market by 2030 (Saudi Vision 2030, 2018).

In parallel with the rapid expansion of HE and medical education in Saudi Arabia, a number of committees and commissions have been established to regulate and maintain the quality of medical education and graduates, including: the GCC Medical Dean's Committee, the Saudi Medical Dean's Committee, the SCFHS, and the National Center for Academic Accreditation

and Assessment. These entities work closely with each other to monitor, manage and maintain the quality of medical education and graduates as well as to propose methods of improving the system.

CHAPTER 3 LITERATURE REVIEW

3.0 Introduction

Quality management has received considerable attention in recent years. It can be traced back to the manufacturing industry and was later introduced into education (Kundu, 2016). There is no single definition of quality in the literature, which could be due to the fact that the perspectives of stakeholders vary widely as to how it should be conceptualized in HE (HE). This has led to extensive debates in the literature, in turn creating a negative image of the concept. Ultimately, this has created a barrier to measuring quality due to the diverse needs of quite a wide range of different stakeholders (Kundu, 2016).

This chapter explores the existing literature on quality in HE in general and in medical education in particular, and the variation in the perspectives of stakeholders, such as students, faculty members and/or employers, as to what constitutes quality attributes in HE. The chapter also sheds light on service quality as this is the basis for developing the model in this study (Section 3.1).

In Section 3.2, the chapter reviews various models of quality in HE. Although HE involves a variety of stakeholder groups – students, faculty members, employers and/or commissions and ministries governing HE – the majority of quality models in the literature have been developed from the perspective of students and/or faculty members. The specific focus of this study is employers' perspectives. However, employers are largely ignored in the building of quality models, despite the importance of incorporating them as stakeholders who are potential contributors to the enhancement of HE, as hirers of graduates. Indeed, seeking to meet the needs of employers could elevate employment rates. The publishing of these rates is mandated by accreditation agencies, ranking systems, performance indicator measures, and all quality management systems, as an indicator of the quality of HEIs. In Saudi Arabia, the NCAAA has included the rate of graduate employment as one of the key performance indicators of the quality of educational institutions (NCAAA, 2018).

Section 3.3 of this literature review explores what a variety of stakeholder groups consider to be the quality attributes in HE. This section contains a subsection that narrows down the focus of the review to the quality attributes of medical education (Section 3.3.2). Because the developed model in this study contains the quality attributes of both medical education and medical graduates, Section 3.4 reviews the literature on which graduate attributes are deemed

desirable in general (Section 3.4.1) and in the medical labor market in particular (3.4.2). In subsection 3.4.3, a number of competency frameworks in medical education are reviewed to show the required outcomes for medical graduates in a number of countries. The available quality models, frameworks and attributes in the literature prepare the ground for the proposed quality model toward the end of this study.

3.1 Service Quality in Higher Education

The concept of service quality was first introduced in the marketing industry, from where it spread to a variety of sectors, including HE. Lewis and Booms (1983, p.100) define service quality as a “measure of how well the service level delivered matches the customer’s expectations”. Teas (1993) views service quality as a gap between performance and standards. Abdullah (2006) refers to standards as features developed based on customers’ expectations of the services they consume. Since the emergence of service quality in the field of HE, continuous work has been executed through service quality studies and more instruments have been proposed in the literature. In order to either measure quality using service quality instruments or develop a novel service quality instrument, feedback is obtained from stakeholders in HE about how they perceive the services provided (Sultan & Wong, 2010). The purpose of this section is to review this literature on service quality instruments in HE.

A number of service quality instruments are seen in the literature; however, they can be narrowed down to three common ones: SERVQUAL (Service Quality), SERVPERF (Service Performance) and HEdPERF (Higher Education Performance). Researchers interested in this area tend to borrow existing instruments as they are or modify them to integrate their own dimensions and attributes that fit their research (Min & Khoon, 2013). These instruments all have one feature in common: they comprise dimensions that break down the object being measured into specific attributes so as to develop a questionnaire, which is then used to measure service quality. Moreover, the development of these dimensions is a prolonged process relying on various factors relevant to the study scope, such as “industries, service types, country and culture, and even [the] providers [of the services being measured]” (Sultan & Wong, 2010).

SERVQUAL was first developed by Parasuraman et al. (1985-1988), who defines it as the difference between perception and expectation. This instrument comprises five dimensions, namely, responsiveness, assurance, tangibles, empathy and reliability (Jelena, 2010). The

scale has been used predominantly in education and a number of other sectors, such as banking, retail, wholesale and health (Teeroovengadum et al., 2016, p. 246). SERVQUAL illustrates the gap between the performance and the perceptions and expectations of stakeholders about the services provided to them. Quality evaluations using SERVQUAL tend to administer the instrument in two stages in order to examine the ‘before (expectations) and after (satisfaction)’ of the services provided.

However, according to Abdullah (2006), scientists agree that the evaluation of education service quality is more effective when focusing on performance in HE services, as opposed to perceptions of quality (Bolton & Drew, 1991a, b; Boulding, Kalra, Staelin, & Zeithaml, 1993; Cronin & Taylor, 1992; Quester, Romaniuk, & Wilkinson, 1995). This means that service quality instruments tend to be used to evaluate and measure the effectiveness of HE services in terms of their performance. This is in contrast to SERVQUAL, and Carman (1990) holds that expectations could be unimportant in service quality evaluation. Concurring, Boulding et al. (1993) note that service quality is strongly linked with perception. It is for this reason that SERVPERF was developed, to, as Randheer (2015) notes, measure the actual quality of a service. The difference between the two models – SERVPERF and SERVQUAL – is minor, according to Jelena (2010), with SERVQUAL containing an expectation factor along with a performance one, whereas SERVPERF depends solely on performance. Yet despite its supporters, SERVPERF has been less successful when applied in HE than in other sectors (Abdullah, 2006). Hence, more recently, the HEdPERF model was introduced specifically to measure service quality in HE by providing holistic insights into students’ experiences, both academic and non-academic (Jelena, 2010).

The HEdPERF instrument is intended to uniquely measure service quality in HE. HEdPERF was developed between 2004 and 2006 and it has been modified several times. Its aim is to be used as an effective instrument in HE (Randheer, 2015). HEdPERF has been widely adopted for studies concerning students’ perceptions of service quality. The reason for the appropriateness of this instrument in HE is that it provides a holistic picture of students’ experiences throughout their entire studies, including both academic and non-academic attributes (Jelena, 2010). It encompasses 41 items that emphasize both the academic and non-academic attributes of HE, grouped into six dimensions: 1) non-academic aspects, which support and assist students to gain the optimum benefits from HE and are delivered by non-academic staff; 2) academic aspects, which refer to the teaching and services delivered by

faculty members; 3) reputation, which refers to the public image of educational institutions; 4) access, which concerns matters of availability and reachability; 5) program issue, which covers the variety of disciplines and academic programs offered to students; and 6) understanding, which refers to the services available to students based on their needs (Abdullah, 2006).

Adding to the original HEdPERF dimensions, a study conducted by Randheer (2015) introduces a new dimension, Culture. This dimension specifically acknowledges Islamic values as an aspect of service quality in Islamic countries, which has made the instrument adaptable to the culture of HEI in these countries. This dimension was introduced also because of the Saudi Arabian education system, where teaching is teacher centric and the Arabic language is primarily used for instruction (Randheer, 2015). On this note, Choudhury (2015) asserts that the importance of culture in evaluations of service quality should not be underestimated.

Another example of service quality instruments was developed by Teeroovengadum et al. (2016), called HESQUAL. Unlike HEdPERF, this instrument incorporated the perception of academics along with the student perspective. HESQUAL is thus used to demonstrate service quality in HE from the perspective of students and academics. Both groups agreed on five different service quality dimensions that should be fulfilled in HE to reach a high level of satisfaction among HE users. These five dimensions encompass the quality of all the services available in HE, and are: administrative quality, physical environment and infrastructure quality, core educational quality, support facilities quality and transformative quality. More quality models in HE were subsequently introduced, either by adapting a service quality approach or not, and they will be discussed further below.

The majority of studies using service quality instruments discussed in the literature focus on one source for measuring quality – internal stakeholders. The emphasis lies on students and/or faculty members and quality is usually only evaluated from their perspective (AlAamri et al., 2020; Hossain & Hossain, 2019; Noaman et al., 2017; Teeroovengadum et al., 2016). The perspectives of other stakeholder groups in HE are dismissed. Moreover, Sultan and Wong (2010) claim that available studies concerning service quality in HE are insufficient. These studies tend to utilize available instruments already established in order to measure service quality in the business world, rather than improving current models or proposing new ones.

3.2 Models of Quality in Higher Education

In addition to defining quality in HE, there is also the issue of the various dimensions that make up a model on the quality attributes of HEI. This section reviews the available models of both general quality and service quality in the literature. One of the first initiatives to identify quality dimensions in HE, in an effort to propose a quality model, was made by Owlia and Aspinwall (1996), based on their extensive review of the relevant literature. Table 6 shows the characteristics and attributes in every dimension. Owlia and Aspinwall (1996) assert that employers are concerned about graduates, who are the focus of Dimension 4 (Content) and the capabilities of universities to prepare graduates, which is covered in Dimension 6 (Reliability). Given that employment is seen as a major purpose of HE, employers' needs and expectations must be taken into consideration if HEIs are to determine how to match their courses with the demands of the ever-changing job market. Employers' perceptions of HE's ability to prepare high-quality employable graduates underpin the dimensions of Content and Reliability. However, the remaining dimensions are also important for defining quality from the perspective of employers. These remaining dimensions provide specifications of the educational experiences needed for graduates to be adequately prepared and to demonstrate a high level of quality. Hence, although Owlia and Aspinwall (1996) emphasize the content and reliability dimensions, the remaining dimensions are also of major importance for HE and graduates (see Table 6).

Table 6

Quality Dimensions and their Corresponding Characteristics in HE (Source: Owlia and Aspinwall, 1996, p.11)

Dimensions	Characteristics
(1) Tangibles:	Sufficient equipment Modem equipment/facilities, ease of access, visually appealing environment, support services (accommodation, sports etc.)
(2) Competence	Sufficient (academic) staff, theoretical knowledge, qualifications, practical knowledge, modern teaching expertise, communication
(3) Attitude	Understanding students' needs, willingness to help, availability for guidance and advice, giving personal attention, emotion and courtesy
(4) Content	Relevance of curriculum to future careers of students, effectiveness, containing primary knowledge skills, completeness of computer skills, communication skills, team working, and flexibility derived from knowledge being cross-disciplinary
(5) Delivery	Effective presentation, sequencing timeliness, consistency, fairness of examinations, feedback from students, encouraging students
(6) Reliability	Trustworthiness, giving valid awards, ensuring promises match goals, handling complaints and solving problems

Ramayah, Zain, Nurulazam and Ahmad (2007) claim that there is no specific, precise universal set of quality dimensions in HE. The authors noted that the sets of dimensions, quality models, and the items within each dimension differ according to different stakeholders. Owlia and Aspinwall (1996) argue that the degree of importance of every quality dimension varies between the stakeholder groups. According to them, the initial service quality dimensions are determined according to the interests of the students, while faculty members and employers could have different perspectives.

A number of studies have been conducted to propose quality models in HE. However, as noted previously, quality conceptualization in HE has primarily emphasized the perceptions of students, with some attention given to academics' views (see Chapter 1). Little work has been done on employers' perceptions of quality in HE. Indeed, a review by AlAamri et al.

(2020) confirm that the majority of quality models are built exclusively from the perspective of students. The authors add that the views of other stakeholders involved in HE need to be explored to expand our understanding of quality in HE. In relation to this matter, Table 7 shows this gap in the literature by summarizing the quality models available in the current literature, revealing a notable gap in quality dimensions, namely, the perspective of employers (see Appendix B for more quality models in literature). Hence it is clear that more work needs to be devoted to exploring the views of employers on quality in HE. More models of quality

Table 7

Quality Models in Higher Education

	Author/s	Year	Targeted Stakeholder(s)	Dimensions
1	Firdaus Abdullah HEdPERF	2006	Students (Malaysia)	• Non-academic Aspects • Academic Aspects • Reputation • Access • Program Issues • Understanding
2	Mahapatra and Khan	2007a	Students in Technical HE	• Responsiveness • Learning Outcomes • Personal Development • Physical Facilities • Academics
3	Mahapatra and Khan	2007b	Students, Alumni, Parents and Employers	• Learning Outcomes • Responsiveness • Personality Development • Academics
4	Sultan and Tarafdar	2007	Students (Private Universities in Bangladesh)	• Reliability • Communication • Courtesy • Access • Competence

				• Responsiveness • Credibility • Security • Understanding • Tangible • Association Image • Price
5	Sultan and Wong	2010	Japan	• Efficiency • Effectiveness • Dependability • Capability • Competencies • Assurance • Unusual Situation Management • Semester • Syllabus
6	Tsinidou, Gerogiannis and Fitsilis	2010	Students (Greece)	• Academic Staff • Administration Services • Library Services • Curriculum Structure • Location • Infrastructure • Career Prospects
7	Jain et al.	2011	Students (India)	• Curriculum • Input Quality • Industry Interaction • Academic Facilities • Support Facilities • Interaction Quality • Non-academic Processes
8	Annamdevula and Bellamkonda	2012	Students	• Teaching and Course Content • Administrative Services

				• Academic Facilities • Campus Infrastructure • Support Services
9	Rodman et al.	2013	Employers	• Outcomes • Financial and Non-Financial Resources and Inputs • Value Chain • Sustainable Development
10	Asif et al.	2013	Employees	• Vision • Leadership Measurement and Evaluation Process Control and Evaluation • Program Design and Resources, and Other Stakeholders
11	G.E. Icli and N.K. Anil	2014	Turkey	• Academic Quality • Administrative Services Quality • Library Services Quality • Supportive Services Quality • Quality of Providing Career Opportunities
12	Randheer	2015	Students (Business Administration) (Saudi Arabia)	• Issues Related to Gulf Culture • Professionalism • Issues at Institution Level
13	Teeroovengadum et al. HESQUAL	2016	Students and Academics	• Administrative Quality • Physical Environment Quality • Core Educational Quality

				• Support Facilities Quality • Transformative Quality
14	Noaman et al. HEQAM	2017	Students and Faculty Members (Saudi Arabia)	• Curriculum • Staff • Career Prospects • Infrastructure • E-service • Library Services • Administrative Services • Location
15	Latif et al. HiEduQual	2017	Students, parents, teachers, and employers	• Teacher Quality • Administrative Services • Knowledge Services • Activities • Continuous Improvement • Leadership Quality
16	Hossain and Hossain	2019	Students (Bangladesh)	• Curriculum • Teaching Competence • Career Development • Health and Safety • Tangibles • Deliverables • Outcome Effort • Leadership • Accessibility • Image • Social Life
17	Abbas	2020	Students Turkey	• Teachers' Profile • Curriculum • Infrastructure and Facilities • Management and Support Staff • Employment Quality

-
- Safety and Security
 - Students' Skill Development
-

Some studies have captured the views of multiple stakeholder groups (Latif et al., 2017; Mahapatra & Khan, 2007; Noaman et al., 2017). However, according to Owlia and Aspinwall (1996), this approach can create confusion as well as making it difficult to delineate between two distinct perspectives. The authors contend that, in order to produce a precise set of quality dimensions, the first step is to define a specific group of stakeholders. Otherwise, the weight of the importance of every dimension should be established for every stakeholder group.

As mentioned above, scant research has been conducted on the measurement of service quality from the perspective of employers (Chapman, Coll, & Meech, 1999; Rodman, Biloslavo, & Bratoz, 2013). A service quality study conducted by Chapman et al. in 1999 measured the performance of trainee/students from the perspective of employers. To improve students' performance, employers in the study suggested enhancing the employer-institution relationship by creating a structure to give employers the opportunity to address their desired skills and research interests of graduates. Another service quality study, conducted by Joseph and Joseph (1997), identifies a correlation between service quality and students' awareness of the needs of employers during the early stages of their study life.

3.3 Quality Attributes in Higher Education

As stated above, there is no fixed set of quality dimensions in HE due to the varied perspectives of a wide range of stakeholders. Unlike the previous section, where dimensions of quality in HE were discussed, this section elaborates on the quality attributes of universities from the perspective of a variety of stakeholders who have been covered in the literature (Section 3.3.1). After a general discussion, the review then narrows down to review the literature pertaining to the quality in medical education in particular (Section 3.3.2).

According to the Russell Group (2012), the World Bank has reported three specific factors shared by successful universities: talented faculty members and students; modern facilities for ensuring an excellent learning and research experience; and governance that promotes autonomy a strategic vision, innovation, and efficient resource management and flexibility.

Rodman et al. (2013) propose an institutional model of HE quality after analyzing several quality standards from the perspective of employers. The model consists of four dimensions: resources and inputs (financial, non-financial and human); a value chain comprising knowledge, research and community activities; sustainable development regarding staff skills, infrastructure and organizational management; and an outcome dimension.

Allam (2020) asserts that teaching and learning, institutional resources, admission criteria, curriculum content, outcome and assessment, and pedagogy are quality dimensions in HE from the perspective of students, faculty members and employers in Saudi Arabia. The author revealed that the work atmosphere, teaching material, quality of faculty members, infrastructure, aptitude tests for admission, variety of courses, alignment of curriculum to the labor market, student assessment, and teaching quality are all quality attributes that fall under the overarching dimensions. However, it is quite misleading to explore the perspectives of a different groups of stakeholders combined; the perspective of each stakeholder group should be investigated separately, according to Owlia and Aspinwall (1996).

3.3.1 Quality attributes in higher education in general

Jain, Sinha and Sahney (2011) assert that input quality is essential for determining quality in HE. The authors reveal that the quality of faculty members and enrolled students are linked to the overall quality of HEI. They assert that effective admission criteria are a quality practice in HE to ensure the quality of students entering HEI. In a similar vein, academics rate the governance of universities and highly skilled faculty members and students as elements that distinguish universities from each other (Kutbi & Hashim, 2017). Similarly, Abbas (2020) refers to teacher quality as a strong point in HE. He asserted that faculty members need to be knowledgeable about their field as well as up to date with what is happening in the labor market. Indeed, linking theory with real examples in the labor market could be beneficial for students' understanding and learning. Chong and Ahmed (2015) add that faculty members should have adequate proficiency in communication skills. This does not simply mean that faculty members are expected to properly communicate with students, colleagues, and management, but that they should be able to deliver and explain the curriculum easily and comprehensively to students.

Appropriate infrastructure has been seen as an indicator of quality in HE (Abbas, 2020). Abbas (2020) asserts that adequate technology, recreational centers, cleanliness of infrastructure, maintenance plans, and eye-catching buildings are all quality indicators of

infrastructure in HE. Jain et al. (2011) claim that the university campus, social activities, counseling, academic facilities such as libraries and laboratories, and other support facilities such as hospitals and recreational facilities are all quality attributes of HE. It has also been found that recreational facilities and extra-curricular activities are linked to quality (Daud, Abidin, & Sapuan, 2011) and they ultimately serve to build a good reputation for HEI (Abbas, 2020). Similarly, Lindberg (2013) claims that extra-curricular activities in colleges of medicine are linked to quality as long as these activities are related to the degree that students are pursuing – i.e., medicine.

Price, Matzdorf, Smith and Agahi (2003) assert that the quality of facilities available in university contributes to high student retention. In Saudi Arabia, a study conducted at King Fahd University of Petroleum and Minerals found classrooms, the appearance of buildings, and the overall physical environment to be key to students' satisfaction with their university experience (Sohail & Shaikh, 2004). Similarly, classrooms and general university facilities play a critical role in enhancing students' educational experiences (Mbise & Tuninga, 2016). The authors added that the curriculum and the ability to contact personnel are core quality attributes of HEI. Another study in Saudi Arabia showed students' satisfaction to be linked to the suitability of faculty members, university infrastructure, campus life, and student support services (Allam & Malik, 2020).

Dicker, Garcia, Kelly and Mulrooney (2019) believe that employers, as well as students, perceive the support services offered to students as a quality attribute in HE. Likewise, Tomlinson (2012) perceives support services as a vital aspect of HE. Indeed, adequate support services and resources offered to students have been shown to enhance students' attainment of employability skills (Nicol, 2010). It has also been shown that the more satisfied students are, the more motivated they are to learn (Ali et al., 2016; Jupiter et al., 2017). Moreover, to demonstrate quality in HE, proper career counseling and employment support services need to be offered to students as means of support (Abbas, 2020; Dicker et al., 2019). These kinds of services will allow students to have an overview of actual work life. They also allow students to decide on their future career and perhaps be well prepared for their chosen future workplace. At the same time, it has been claimed in one study that students actually underestimate the importance of career support (Dicker et al., 2019). However, students should have access to career orientation programs to prepare them for the labor market. From this perspective, students need to be equipped with necessary

competencies and skills for the labor market as they lead to better employment opportunities. In addition, some students request that HEIs assist graduates with finding jobs after graduation. For example, HEI could promote their graduates to the labor market in order to ensure better recruitment opportunities (Abbas, 2020).

With regard to teaching, curriculum quality, teaching and learning techniques, material and resources quality, and many more factors contribute to the quality of teaching. Bhowmik, Roy and Banerjee (2013) assert that pedagogy is a key aspect of teaching and learning experiences in terms of achieving quality in HE. Jain et al. (2011) claim that curricula need to be contemporary and aligned with the needs of the labor market to achieve quality in HE. However, memorization is a dominant technique used for learning in the Arab world (Cassidy & Miller, 2002). This learning technique prevents students from obtaining and developing problem-solving skills and critical thinking abilities. Saudi Arabia's Ministry of Education is actually pushing universities to enhance the quality of services and outcomes. In order to achieve that, there is a need to improve the curriculum and teaching strategies to meet the needs of both students and the labor market (Cassidy & Miller, 2002). Teaching and learning experiences in HE are reflected in students' academic achievement and grades (Allam & Ahmad, 2013). From the perspective of many authors, these factors indicate the quality of the educational services that students receive. Thus, teaching and pedagogic quality are key quality indicators for ensuring satisfactory student academic achievements.

Regarding curricula, Abbas (2020) describes a high-quality curriculum as one that incorporates soft skills development and is designed for easy understanding. A number of studies in the literature have demonstrated that employers believe that developing students' skills to fit the needs of the labor market can be achieved through employers' involvement in HE (Alshare & Sewailem, 2018; Iqbal & Zenchenkov, 2014; Swailes et al., 2012; Thomas, Piquette, & McMaster, 2016). However, Matu and Paik (2021) conclude that there is no evidence that employers' involvement in HE does actually result in better preparedness of students for the labor market. The authors suggested that, in order to prepare students for the labor market, the focus needs to be shifted from employers' involvement in curriculum design to the integration into the curriculum of the soft skills essential for the labor market.

To achieve quality in HE, Habib, Abbas and Noman (2019) suggest that HEIs work closely with stakeholders to understand their needs and expectations, as well as working to meet these needs. Internal stakeholders are regularly encouraged to provide their opinion about the

quality of HEIs (Ryan, 2015), such as, for example, job satisfaction ratings, course evaluation, student experience, library services surveys, amongst others. However, Ryan (2015) argues that these stakeholders might not be sufficiently knowledgeable about what quality entails. Anderson (2007) questions the ability of students to provide fruitful feedback that can lead to quality improvements in medical education. In spite of this, in 2006, the European Association for Quality Assurance in HE (ENQA) stated that some agencies encounter difficulties identifying students who are able to effectively judge the quality of services received in universities, as part of the process of assessing quality (Ryan, 2015). In contrast, however, Elassy (2013) asserts that the involvement of students in evaluating quality does result in improved communication and leadership skills of students. Indeed, Awan et al. (2017) finds a linkage between fulfilling stakeholders' needs and the quality of HEI. Abbas (2020) claims that in order to achieve quality in HE, students' voices should matter to management. Likewise, Jones (2010) states that translating the voices of students into enhancement opportunities is a quality practice in HE. Moreover, employers believe that universities are responsible for working to build effective relationships with the labor market to identify their changing needs and expectations (Rodman et al., 2013).

Building connections between the labor market and HE has been a trend in HE worldwide following the realization of the implications of this issue for society and economy. Indeed, the NCAAA encourages, within its standards, the participation of employers in the evaluation of the suitability of learning outcomes and the performance of HEIs (NCAAA, 2018). Similarly, Abbas (2020) suggests collaborating with employers in the work field to understand the needs of the labor market. Cranmer (2006) promotes the involvement of employers in curriculum design and field experience/internships in order to create proficient graduates for employment.

Based on in-depth studies of GCC education systems, Gallagher et al. (2015) suggest broadening the involvement of employers in HE delivery in order to fill the gap between education and the labor market in the region. Likewise, a number of studies have suggested that HEIs should work continuously to align the curriculum with the needs of the labor market in order to keep students updated on evolving market changes (Alshare & Sewailem, 2018; Atef & Balushi, 2017; Belwal, Priyadarshi, & Al Fazari, 2017; Griffin & Coelho, 2019; Iqbal & Zenchenkov, 2014; Thomas et al., 2016). After studying the skills gaps in GCC countries, Gallagher et al. (2015) suggest aligning curriculum design with evolving

market needs. This could not be achieved without the permanent participation of employers in terms of providing feedback to HE and getting involved in curriculum design. In other words, the role of employers is presented internally in HEIs in the form of involvement in evaluation and program design, whereas it is presented externally in the form of collaboration in terms of community services and research, as well as the recruitment of graduates.

The role of HE goes beyond preparing graduates for society and includes new contributions to knowledge through scientific research that, in turn, enhances social wellbeing. Indeed, it has been evident that, from the perspective of employers, the outcome dimension of quality in HE is most crucial to society, followed by the value chain dimension (Rodman et al., 2013). The outcome dimension deals with the skills required by the labor market – these elevate employability and thus increase the chance of promotion at work. In addition, this dimension includes research activity that produces new knowledge for disciplines, as well as persistent collaboration between HE and employers in serving the community. The participation of students in community services is, in fact, a quality indicator of HE (Lindberg, 2013). Although students underestimate the effectiveness of community services in preparing them for the labor market (Ajina, Alkhateeb, Alkhateeb, & George, 2020), the NCAAA developed a practice for HEIs that involves arranging activities to serve the community. This can take a variety of forms, such as conferences, campaigns, exhibits or social activities, to demonstrate a distinguished level of quality (NCAAA, 2018). In addition, an entire set of good practices has been developed by the NCAAA to encourage HEIs to expand the engagement of faculty members in scientific research activities (NCAAA, 2018).

Akareem and Hossain (2016) suggest that HEIs should work to build a prestigious reputation in order to demonstrate a status of high quality. Similarly, a linkage exists between reputation and the quality attributes of HEIs (Joseph, Yakhou, & Stone, 2005; Sohail & Shaikh, 2004). Studies have shown that the reputation of a university plays a key role in the recruitment of its graduates. Indeed, institutions with a good reputation are likely to produce more competent graduates for the labor market (Velasco, 2012). It could be also the other way around, where competent graduates give a good reputation to their universities. Sin et al. (2017) claim that the Portuguese private sector for HE has reformed the curriculum to incorporate teaching employability skills in order to elevate their reputation, which is described as low compared to the public HE sector.

On that note, a study by Hesketh (2000) shows that employers' perceptions of the quality of

an institution are generally based on the performance of previously recruited graduates. Similarly, Allam and Ahmad (2013) claim that quality in HE could be measured through student assessment results. If earlier recruits perform well, employers will target this institution for more potential candidates (Shah et al., 2015). Consequently, graduates from prestigious institutions receive greater chances of employment and higher financial returns than others (Velasco, 2012). However, a positive correlation between reputation and graduate salaries has not yet been definitively determined (Chevalier, 2003). In addition, these recruitment preferences from selective universities could cause a demand gap across universities, with students likely to flock to certain prestigious universities. Studies also show that employers prefer graduates from private institutions rather than public ones (Shah & Brown, 2009). However, an early study conducted by Willis and Taylor (1999) rejects the possibility of an association between performance and certain universities, arguing that, ultimately, the name of the university a candidate has attended has no significant influence on employment decisions. This indicates that employees who perform worse are not necessarily correlated with specific universities that lack a good reputation, and the situation is the same for outstanding employees; employers do not tend to intentionally recruit graduates from certain universities and discard others. It has been argued that the quality of faculty members and their reputation, as well as how faculty members treat students, has an impact on the reputation of a university and these are both linked to students' satisfaction levels (Browne et al., 1998; Khan & Yildiz, 2020). In addition, a study conducted by Sahney et al. (2004) suggest that the reputation of a HEI might positively affect its service quality.

On the issue of establishing quality assurance in HE, governments worldwide have launched accreditation agencies who are responsible for generating and controlling predetermined quality standards for HEI to fulfill, in order to be granted accredited status (Albaqami, 2015). The main role of accreditation agencies is to regulate the quality of services provided in the education process in both public and government institutions. In Saudi Arabia, the NCAAA is the body that governs academic accreditation for HE (El-Maghraby, 2011) (see Chapter 2).

However, the quality assurance approach is a fixed approach and is probably unsuitable for the flexibility and adjustment to changes required in HE systems (Amaral & Rosa, 2010). This has created debate about the appropriateness of the standardization of quality assurance systems. Boulet and Zanten (2014) and Davis (2006) assert that the effectiveness of academic accreditation in improving quality in HE is not proven. Amaral and Rosa (2010) claim that

most quality assurance systems focus on evaluations for the sake of academic accreditation, whereas student assessments are quite overlooked. Blouin and Tekian (2018) also suggest that academic accreditation status indicates the compliance of institutions with predetermined quality standards and does not necessarily reflect the quality of an institution. In addition, the introduction of quality assurance has caused HEIs to lose their ability to operate freely and diminished trust in them throughout society and government (Yingqiang & Yongjian, 2016).

A study conducted in the Netherlands revealed that the introduction of accreditation has been beneficial for resolving deficiencies in HE (Harvey & Williams, 2010). However, one study claimed that quality assurance hinders learning and innovation in the United Kingdom (Hoecht, 2006). Cheng (2016) interprets these standards as the minimum required, not necessarily as guarantors of distinction in the delivery of services. He added that a high concentration on compliance with accreditation standards may lead to a failure in achieving student learning outcomes. Moreover, Hoecht (2006) asserts that a perception of strong educational services does not inevitably imply improved teaching quality, since quality management limits faculty members' freedom to deliver their courses. In addition, Amaral and Rosa (2010) contend that there was relatively little chance that quality assurance systems in Europe would lead to improved quality in HE. Nonetheless, some studies have shown that academic accreditation does have a positive impact on medical education (see Section 3.3.2).

After elaborating on what constitutes quality in HE in general, the next section reviews the quality attributes specific to medical education.

3.3.2 Quality attributes in medical education

Bendermacher, De Grave, Wolfhagen, Dolmans and Oude Egbrink (2020) explore the perspectives of faculty members and students of the drivers of a quality culture in medical programs. The authors showed that the key features of a quality culture in medical programs, from the perspective of these two groups, are: 1) establishing an open systems perspective; 2) involving stakeholders; 3) valuing teaching and learning; 4) navigating between ownership and accountability; and 5) establishing strong leadership to regulate these four features. From the perspective of faculty members, teaching quality is achieved when faculty members are given autonomy to develop and amend teaching activities. Faculty members and students perceive quality in medical education as the alignment of courses with the needs of the labor market. Moreover, faculty members and students believe that in order to achieve quality, medical programs must establish open systems. This means programs that are open to

insights and feedback from a variety of stakeholders, with the feedback being used to improve the programs (Bendermacher et al., 2020).

In spite of the fact that admission criteria are a quality indicator in HE and ensure the quality of students entering HEI, according to Jain et al. (2011), in the medical field, a unique admission assessment is needed to address whether students are suitable and fit for the medical field and to be doctors in the future. High grades in schools, by themselves, do not guarantee students a place at medical colleges. As seen in this chapter, beside high academic achievement in schools, students entering medical colleges need to possess certain soft skills to succeed in the medical field. Moreover, Jain et al. (2011) claim that the quality of faculty members is essential to achieve quality in HE. The number of faculty members available must be adequate if the university's mission is to be achieved. The sufficient ratio of faculty-to-students in medical colleges is 1:7, according to the Committee of Deans of Medical Colleges of Gulf Cooperative Council countries (Telmesani et al., 2011).

The former medical educational system in Saudi Arabia was teacher centered (Telmesani et al., 2011), which probably impacted the preparedness of medical graduates for the labor market. However, calls from the Saudi medical community stimulated the initiative to improve the traditional system in the early 2000s (Telmesani et al., 2011). The traditional medical educational system was also criticized for its heavy volume of curriculum as well as the inclusion of unnecessary subjects (Elfaki, 2004; Shawky & Soliman, 2001). It has been found that overcrowding the curriculum affected students' academic achievement (Harden, 1999). The reforms that were devised to improve the traditional system were also established to align the curriculum with the needs of the labor market and the employment community (Ahmed, 2002) and to substitute teacher-centered learning strategies with a student-centered approach (Khalid, 2008).

Similarly, in the United Kingdom, an initiative was taken by medical schools to make major changes to the medical curriculum. The General Medical Council (GMC) mandated major curriculum changes to overcome the low preparedness of fresh medical graduates (General Medical Council, 2003). As a result, the Tomorrow's Doctors framework was revised to suggest changes to the curriculum, including the adoption of modern educational theories to better prepare medical students in terms of both soft and hard skills, with more emphasis on clinical and soft skills (General Medical Council, 2003). This approach proved effective in improving the preparedness of medical students to work in the medical field. According to a

study conducted by Cave et al. (2007), medical graduates felt better prepared and confident to work in the medical field compared to a 2001 census, which was prior to the major curriculum changes. Watmough, O'Sullivan and Taylor (2010) claim that, in order to comply with Tomorrow's Doctors recommendations, the amount of community-based medical education offered to medical students should be increased and problem-based learning should replace traditional lectures.

In community-based medical education, students are given opportunities to learn and observe medical practice in an actual work environment, such as hospitals or clinics. Introducing community-based education in the earliest years of studying medicine was found to be effective in developing graduates' attitudes. Additionally, it was proven by Chhon-Huat Koh, Khoo, Wong and Koh (2008) that a problem-based curriculum contributes to preparing graduates who are lifelong learners. In line with these major changes, graduates felt more prepared to practice in terms of their clinical, self-learning, communication and research skills; however, they did feel that the curriculum reform had weakened their medical knowledge compared to previous graduate cohorts (Watmough et al., 2010).

In the Arab world, Saudi Arabia is a leading country in medical education and research (Meo, Hassan, & Usmani, 2013; Shehatta & Mahmood, 2016). In particular, research in the health sciences has undergone rapid growth in recent years and the majority (more than 75%) of publications are authored by universities (Ul Haq, Ur Rehman, Al-Kadri, & Farooq 2020). Indeed, international research collaboration is heavily practiced in Saudi Arabia. A study by Ul Haq et al. (2020) shows that the majority of international collaborations in Saudi publications are produced with Egypt, the United States, and the United Kingdom. To improve international collaboration, Saudi Arabia established scholarship programs to send students abroad, specifically to advanced countries, in order to train and prepare them in the advances available in those countries. These scholarship programs open doors for international collaboration in research and consequently play a role in enhancing the quality of publications. Frenken, Ponds, and Van Oort (2010) believe that scientific papers with international collaboration are more likely to be accepted in high impact factor journals.

Although the process of earning an academic accreditation has been criticized worldwide (Alrebish, Jolly & Molloy, 2017; Anderson, 2007; Jones & Saram, 2005), it has been shown that medical student performance is positively correlated with accreditation. The scores of licensing examinations are highest in medical programs that have recently been granted

accreditation (Blouin & Tekian, 2018; Roy, Wood, Blouin, & Eva, 2020). Thus, the improvements made as part of the accreditation process are reflected in improved academic outcomes. However, Blouin and Tekian (2018) and Roy et al. (2020) report that students' scores in licensing examinations dropped for a number of years after accreditation took place.

In Saudi Arabia, academics think that NCAAA accreditation creates stress and a burden among faculty members because it requires a large amount of unnecessary paperwork (Alrebish et al., 2017), which distracts academics from actual teaching and learning (Jones & Saram, 2005). Roy et al. (2020) suggest that rather than creating a burdensome atmosphere for faculty members when undergoing accreditation, a system of continuous quality improvement should be established to ensure sustainably improved outcomes. Similarly, academics have contended that creating a quality culture in order to fulfill accreditation requirements is better than stressing and burdening faculty members when undergoing the accreditation processes (Alrebish et al., 2017).

Nonetheless, according to Alrebish et al. (2017), academics in medical schools maintain that although improvements and changes made for the purpose of accreditation fall slightly after accreditation visits, the process remains sustainable and does create a quality culture. This sustainability is thought to be achieved due to the periodic visits of accreditation agencies, annual status reports, and the re-accreditation process every seven years for full accreditation and every three years for partial accreditation in Saudi Arabia (Alrebish et al., 2017). Indeed, some academics believe that the largest advantage of the accreditation process, in particular self-study reports, is that it allows programs to identify weak points and create opportunities for enhancement (Alrebish et al., 2017). However, doubts have been expressed about the suitability of the NCAAA's accreditation standards, as some believe that they are too complex and rigid and not actually specific enough for medical schools. International accreditation standards, on the other hand, are seen as flexible and easily altered to suit medical schools (Alrebish et al., 2017).

In Saudi Arabia, after medical students successfully pass five years of medical studies, practical medical training commences in the form of an internship as part of the medical program, followed by a residency program for medical specialization. Jain et al. (2011) assert that such practical training is a quality indicator in HE. However, Post et al. (2015) claim that recruitment is perceived as problematic and challenging because of the improperly designed training/internship programs, as well as gaps between training/internship programs and the

actual needs of the labor market. This might create demand for the development of training or internship programs that allow students to gain the experiences that match the actual needs of the labor market.

Hoellein et al. (2007) claim that teaching experience reaches its optimal level when students are involved in their training programs. However, the involvement of residents in student training programs could restrain the engagement of students in training, and students believe that the quality of teaching they receive in training programs is impacted by involvement in residencies. On the other hand, residents are satisfied with the involvement of students and understand that this is part of the process (Hoellein et al., 2007). Indeed, residents believe that the presence of students on hospital rounds triggers deeper discussion and revision of basic medical knowledge, which benefits residents in terms of refreshing their medical background (Hoellein et al., 2007).

Medical students have described themselves as ‘outsiders’ on their training programs, which impacts their preparedness for the labor market (Illing et al., 2013, p.9). As a result, Illing et al. (2013) suggest that offering on-the-job learning, in which trainees actually hold a role in practice, would enhance the preparedness of medical graduates. Succi and Canovi (2020) suggest that universities should offer learning opportunities in the work field as a means of allowing students to gain work experience in order to address the issue of inadequacy in graduates’ employability. However, massive and long work experience would be quite doubtful (Lindberg, 2013). According to Lindberg (2013), spending a long time in the same workplace may imply that a graduate lacks the initiative to develop and enhance. On the other hand, Teagle, George, Gainsborough, Haq and Okorie (2017) agree that on-the-job training makes graduates more confident and possibly capable of delivering safer and higher-quality patient care.

Illing et al. (2013) believe that no other learning setting, such as classrooms, is more effective than a real clinical environment in preparing graduates for the medical field. Indeed, Cranmer (2006) doubts the effectiveness of classroom learning in making graduates more employable. Additionally, Post et al. (2015) suggest that embedding soft skills training in residency is effective, because if it is not done, medical graduates will find it difficult to obtain these skills afterwards. Moreover, Melo et al.’s (2011) study of the effectiveness of problem-based learning in training programs finds that active learning using problem-based learning is more effective than traditional learning in terms of knowledge acquisition and the development of

self-learning skills. The authors asserted that medical students felt that their medical knowledge improved after utilizing the problem-based learning method in their training. Indeed, it has been found that medical students and residents prefer problem-based learning as a learning method in training/residency programs over traditional learning methods (Newman, 2003; Vernon & Blake, 1993).

Moreover, it has been noted that proper communication between medical schools and employers providing internship/training programs to students enhances the competency, preparedness and clinical skills, in terms of medical history taking and patient examination, of medical graduates (Frankel & English 2004). In Kuwait, a study by Premadasa, Shehab, Al-Jarallah and Thalib (2008) shows that interns lack some basic clinical skills. To overcome this matter, the authors suggested building an ongoing relationship between hospitals and universities and creating opportunities for proper academic supervision. Indeed, proper supervision of medical students undertaking training, by an academic supervisor, along with proper feedback, would help in the transition from a medical education environment to the actual medical labor market (Brown, Chapman, & Graham, 2007).

In summary, the previous sections in this chapter have explored what constitutes quality in HE and medical education in particular. This final section has shown that the literature has discussed in detail the quality of medical education, whereas the perspective of employers on this matter has been insufficiently investigated. The following sections explore the quality attributes of graduates in general and of medical graduates in particular.

3.4 Quality Attributes of Graduates

This section reviews the literature on what constitutes a high-quality graduate. The section first explores the attributes of high-quality graduates in general (Section 3.4.1). Next, the scope of the review is narrowed to explore the attributes of medical graduates in particular (Section 3.4.2).

3.4.1 Quality attributes of graduates in general

Generally speaking, employers look for employability skills in potential candidates. Indeed, Cox and King (2006) assert that universities that focus on students' employability would be attractive to more capable prospective students and consequently produce more employable graduates for the labor market. Similarly, studies have shown that students value employability skills for transiting to the labor market (Belwal et al., 2017; Griffin &

Coelhoso, 2019). Indeed, Abbas's (2020) study finds that students believe that employability support marks the quality of HE. Students who do attain and demonstrate employability skills often show outstanding performance in the labor market (Griffin & Coelhoso, 2019; Iqbal & Zenchenkov, 2014; Shorfuzzaman & Alhussein, 2016; Thomas et al., 2016).

The concepts of employability and graduate quality have been continually debated in the literature, including the need for graduates to possess soft skills to match the requirements of the labor market (Clarke, 2017; Crossman & Clarke, 2010). This debate has not yet come to an end (Clarke, 2017; James, Warhurst, Tholen, & Commander, 2013), and quite what employability means remains unclear (Griffiths, Inman, Rojas, & Williams, 2018). For the United Kingdom HE Academy, employability is:

a set of achievements, skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy. (Pegg, Waldock, Hendy-Isaac, & Lawton, 2012, p. 4).

Hillage and Pollard (1998) define graduate employability as acquiring adequate knowledge, and the required hard skills and attitudes essential for the workplace. With specific regard to medical graduates, employability implies that they need to demonstrate solid medical knowledge, practical and clinical skills, and soft personal skills. Attempting to define this complex concept is quite challenging because it changes rapidly and varies in different contexts (Ciappei & Cinque, 2014). In addition, the variety of stakeholders in HE, each with different perspectives and needs, has created obstacles to reaching a specific definition of employability skills. This section will explore the elements of employability that employers seek in potential candidates: knowledge, practical skills and soft skills.

Generally, although universities have worked to ensure that students fit the labor market and that their education is aligned with employers' needs, there is still a mismatch between HE and the labor market in terms of graduate competencies (Archer & Davison, 2008). The reason for this could be the high emphasis that universities place on academic attainment, with less attention being paid to soft skills (Sin & Neave, 2016; Tomlinson, 2012). Succi and Canovi (2020) claim that HEIs neither explain the necessity of gaining soft skills to students nor prepare them for the labor market. As a result, HE systems have been criticized by external stakeholders for failing to prepare graduates for the labor market (Clarke, 2017;

Moreau & Leathwood, 2006; Tomlinson, 2012), with employers believing that HE has not equipped graduates with the soft skills essential for employment (Hurrell, 2016).

A study by Llewellyn Smith (2015) shows that although 54% of employers in the United Kingdom see graduates as well prepared for the labor market, they still believe that they lack certain soft skills. Llewellyn Smith (2015) contends that graduating graduates unprepared for the labor market has contributed to increased job vacancies. Andrews and Higson (2010) point out that employers expect graduates to be employment ready when entering the labor market. However, Mirza and Karolak (2019) find that students think that HEIs do not prepare them adequately for the labor market, especially pertaining to their soft skills. Indeed, the gap between employers' priorities and instructors' beliefs about what constitutes essential employability skills probably affects employment among graduates (Singh et al., 2013). In other words, HE's failure to adhere to employers' requirements could lower graduate employment opportunities.

Velasco (2012) notes that employers strive to employ the smartest and most competent graduates and that students with high grades tend to have a greater chance of being recruited. Thus, high academic scores ensure employability after HE. Students believe that the harder they work to get high grades, the greater the probability that they will find a job. This puts degrees and grades at the top of the list of qualifications that employers usually seek in a candidate, in the eyes of students. Indeed, student academic achievement is seen as a quality indicator of HE (Allam, 2020), and extensive knowledgeable of the field is a quality attribute of graduates (Ajina et al., 2020). Similarly, Agus, Awang, Yussof and Mohamed Makhbul (2011) and Damoah et al. (2021) find that the most significant attribute of graduates is their attainment of knowledge. However, Collet et al. (2015), claim that graduates do not meet the expectations of the labor market in terms of knowledge. Although new knowledge and trends in the field are critical, Ajina et al. (2020) find that students perceive that comprehending fundamental knowledge and theories is more important for the labor market.

Despite the fact that degrees and educational quality are crucial, a survey among 2,576 employees in Saudi Arabia conducted by Alnamlah (2016) reveals that 62% of the respondents had pursued a career path different from their academic major. Additionally, Willis and Taylor (1999) assert that academic standards do not correlate with the performance of graduates in the workplace, although these standards have to be set as a form of periodic evaluation of the products of academic programs after graduation. However, the

situation in medical education varies (Section 3.4.2). According to a study by Damoah et al. (2021), employers rate knowledge as a more important desirable attribute of graduates than interpersonal skills. However, according to Archer and Davison (2008), employers believe that graduates' soft skills have more value in the labor market than qualifications do. Thus, a distinctive degree alone does not secure employment.

A number of studies in the literature have shown that employers' most favored attribute among high-quality graduates is personal skills (Dicker et al., 2019; Velasco, 2012). Personal skills, or soft skills, are those essential skills that enable people to interact with others. A 2008 study conducted with 300 employers who had recruited recent graduates in the United Kingdom found that the candidates were selected because of their personality and skills rather than because of their academic degrees (Branine, 2008). There is probably a lot of emphasis placed on how well the personality of a graduate fits the organization and how well he or she is likely to adapt to the atmosphere in the organization (Velasco, 2012). If a candidate does not fit into the organization, this affects their performance and can cause low productivity (Kristof, 1996). A study by Succi and Canovi (2020) shows that employers and students' perceptions of the soft skills that are important for the labor market vary significantly. Unlike employers, graduates underestimate the importance and value of employability and soft skills in the labor market (Dicker et al., 2019; Sin & Neave, 2016). This section shows how extensively employers value soft skills as a quality attribute of graduates in the literature.

Saichaie and Morpew (2014, p. 524) assert that HE is the "pursuit of a credential rather than the pursuit of knowledge." It is essential to develop students who are lifelong learners and to improve their personal qualities rather than to merely spoon feed them knowledge. According to Brooks and Everett (2008), the process of achieving employability does not end with graduation from HE and the attainment of a degree; rather, learning and training for graduates are lifelong endeavors. Graduates are expected to keep on developing and learning throughout their careers. According to Clarke (2017), in order to pursue better job opportunities, graduates need to work hard to obtain both hard and soft skills.

Tomlinson (2012) argues that graduates must invest in education and continuous development and learning to attain a better career. He claimed that earning a degree does not guarantee entry to the labor market, as possessing this attribute has recently become a minimal requirement and the labor market demands more. Singh et al. (2013) report that

employers seek candidates who demonstrate the ability to continually acquire knowledge and learn throughout their lives. Self-learning skills are also rated important for the labor market from the perspective of students (Ajina et al., 2020).

Brown and Hesketh (2004) claim that graduates are now aware of the declining value of formal university undergraduate degrees and that they are exploring additional qualifications to improve their credentials for the labor market. They are also pursuing internships, international experiences, and voluntary work to enhance their profiles in the labor market. Lindberg (2013) reports similar findings, with medical students being encouraged to commit to voluntary work and conferences. Dicker et al. (2019) highlight the importance of establishing extracurricular activities designed to help students develop soft skills. A study by Allam (2020) came to a similar conclusion, holding that soft skills development should be part of the curriculum to demonstrate quality in HE. Likewise, a study showed that students who enroll on soft skills courses and are able to demonstrate a satisfactory level of skill attainment are more desirable in the labor market (Thomas et al., 2016). Moreover, Issa and Siddiek (2012) find that graduates tend to enroll in additional courses – after and during their university studies – to give themselves a higher chance of being hired.

The literature discusses a vast variety of skills required in the labor market. Employers mostly favor three attributes in recent graduates: “Professional understanding (theory and practice profession-related), Changeable/formable (flexibility and adaptability to changes), [and] Skillful practices (information technology and communication skills)” (Bamwesiga, 2013, p. 45). However, Bamwesiga's study was not specifically designed to explore the situation for medical graduates but rather for a variety of disciplines, including agriculture, accounting and education. According to Succi and Canovi (2020), employers view important soft skills for the work field as “being professionally ethical, adaptability to change, creativity and innovation, customer/user orientation and teamwork” (p. 1844). Employers also favor graduates who are professional, possess an attitude of integrity and behave ethically in the workplace, according to Singh et al. (2013). Similarly, Ajina et al. (2020) find that students rated discipline and ethical behavior as the highest skills for demonstrating professionalism in the workplace.

Studies have shown that graduates need to demonstrate confidence and leadership skills to enter the labor market. A study by Makki, Salleh, Memon and Harun (2021) find that highly self-confident graduates were more likely to be recruited. Moreover, although leadership

skills have been seen as a desirable attribute of graduates in a number of studies (Damoah et al., 2021; Singh et al., 2014), some studies (Agus et al., 2011; Direito et al., 2012) reported that graduates' proficiency in terms of leadership skills did not meet employers' expectations.

Moreover, Allam (2020) claims that students, faculty members and employers perceive coaching students to be creative is a quality indicator of HE. This correlates with the findings of Ajina et al. (2020), who assert that students believe that in order to prepare for the labor market, graduates must be able to solve problems creatively. Abbas (2020) also shows that students believe that incorporating creativity skills development into the curriculum is a quality matter in HE. Research skills, problem solving, analysis and flexibility are examples of skills that are highly rated by Australian employers (Workplace Research Centre, 2014). However, for Damoah et al. (2021), creativity and innovative skills are rated the least desirable skill that graduates require for the labor market. However, to indicate the importance to the labor market of graduates being creative, numerous studies have found that their creativity and innovativeness skills do not meet the expectations of employers (Collect et al., 2015; Direito et al., 2012).

The Dearing Report-National Committee of Inquiry into Higher Education (Dearing, 1997) notes that employers routinely seek candidates who possess at least the following four skills: communication skills, numeracy skills, IT skills and the skill of 'learning how to learn'. Allam (2020) reports that a variety of stakeholder groups see communication skills and teamwork as quality attributes in HE. Likewise, students have contended that effectively dealing with colleagues is essential for acting professionally at work (Ajina et al., 2020). Damoah et al. (2021) assert that employers rate teamwork as a desirable attribute for the labor market but communication skills less so. Nonetheless, employers have emphasized that communication and ethical skills play an important role in recruitment decisions (Alshare & Sewailem, 2018). Indeed, communication skills were rated the second highest personal skill required for the labor market by students (Ajina et al., 2020). Also from the perspective of students, being a good communicator who is able to openly accept different viewpoints and persuasively dialog with others was a key competence (Ajina et al., 2020). Some studies, however, have reported that employers are not fully satisfied with the level of graduates' communication skills (Damoah et al., 2021; Direito, et al., 2012; Wickramasinghe & Perera, 2010), especially amongst employers who indicate they highly value such skills. To reemphasize the importance of communication skills, almost all competency models designed

for medical education stressed communication skills as a desired outcome for graduates (see Section 3.4.3).

Organizations usually seek to recruit experienced employees rather than recent graduates. Despite the fact that academic scores of graduates are key and may predict their future performance (see Section 3.4.2), work experience and professional skills are important characteristics of candidates. A 2009 study conducted by the Australian Industry Group revealed that work experience is the main focus of employers (Australian Industry Group, 2009). Willis and Taylor (1999) claim that the availability of adequate internship and training opportunities to students is linked to the quality of HE. According to the authors, training experiences serve as opportunities to prepare students for the labor market. Indeed, in Saudi Arabia, the NQF mandates that professional specialties that incorporate practical skills have to include internship or training credit hours in their program design (see Chapter 2). Ajina et al. (2020) detect a gap between students' outcomes in this area and the requirements of the labor market and they suggest enhancing the career development and training programs provided to students in order to narrow this gap. In addition to training programs, as discussed earlier, curricula and courses need to be designed to align with the needs of the labor market.

An Australian study by Crossman and Clarke (2010) show that employers preferred to recruit graduates with international experience. The authors held that international experiences relate to the employability of graduates and can even enhance employability. Indeed, Singh et al. (2013) claim that multinational employers tend to have higher expectations of candidates due to their exposure to a diversity of multinational staff and standards compared to local employers. For that reason, universities are encouraged to place an emphasis on international experience by, for instance, offering international internship experiences or student exchange programs. Graduates with international experience are more competent in terms of knowledge, skills and attitude and they are thus of higher value to prospective employers in a global labor market (Crossman & Clarke, 2010).

Globalization has also created a need for a common language, a feature of which is that English has become a common language for instruction in HE (Picard, 2007). Teichler and Jahr (2001) claim that employers are more interested in graduates who are proficient in a foreign language, although they add that teaching English and having English as the medium of instruction are problematic for some teachers. Indeed, although the medium of instruction in medical colleges

in Saudi Arabia is English, it has been found that teaching in a foreign language creates an additional burden and leads to stress for some students (Frank, 2000). Thus, there is a need to set English language competency assessment as an admission criterion to universities in order to prove the high quality of HE in Saudi Arabia (Allam, 2020). Indeed, Randheer (2015) assert that a strong command of English can raise a graduate's profile in the Saudi labor market. In Malaysia, where, as in Saudi Arabia, the English language is not the mother tongue, it has been reported that low competency in English plays a major role in the unemployment of graduates (Salina, Nurazariah, Noraina, & Jegatheesan, 2011).

In addition to soft skills, employers value computer literacy. The European Commission stated that, among 7,036 employers from 27 different European countries, “teamwork, sector-specific skills, written and oral communication skills [and] *computer literacy*” captured their attention when hiring recent graduates (European Commission, 2010, emphasis added). Indeed, Shorfuzzaman and Alhussein (2016) find the IT skills of graduates to be linked to better job performance in the labor market. In contrast, it should be noted that at least one study has reported that employers perceive IT technology skills as not highly desirable in the labor market. This finding aligns with the perspective of students, who underestimate the importance of proficiency in computer programs for the labor market (Ajina et al., 2020).

This section has sketched out the findings of a range of studies specifying the required competencies and work experiences of graduates upon entry to the labor market. The studies reveal that employers look for graduates who have accumulated work experience and who possess English language proficiency and computer literacy. The literature shows that employers identify soft skills – professionalism, ethics creativity, continuous and self-learning, communication skills, teamwork, leadership and confidence – to be highly desirable. These studies discuss the attributes of graduates in general and are not specific to the medical field. The next section narrows down the scope of the review to consider specifically the attributes that constitute a high-quality medical graduate.

3.4.2 Quality attributes of medical graduates

In order to bridge the gap between medical education and the labor market, there is a need to understand how high-quality medical graduates are perceived by employers. This section thus explores the literature on the desired quality attributes of medical graduates.

Limited preparedness of medical graduates is indeed a global concern and a number of

studies have reported on this (Armstrong, Mackey, & Spear, 2004; Goldacre, Taylor, & Lambert, 2010; Hilmer, Seale, Le Couteur, Crampton, & Liddle, 2009; Langdale et al., 2003; Scheffer, Edelhäuser, Tauschel, Reichmann, & Tekian, 2010; Windish, Paulman, Goroll, & Bass, 2004). According to Illing et al. (2013), medical graduates believe that they are well prepared for the medical field in terms of communication, teamwork, and practical skills, but less so in areas of practice in terms of medicine prescription, ward management and handling paperwork. Similarly, another study showed that recent graduates felt unprepared in terms of time management and medical prescribing, but more prepared for working with patients and colleagues (i.e. communication), history taking and medical examinations (Morrow et al., 2012). However, a study by Matheson and Matheson (2009) shows that employers see medical graduates as ineffectively trained and equipped in terms of communication, and clinical and practical skills.

Generally speaking, academic achievement is a critical attribute that reflects the caliber of medical graduates. Carr, Celenza, Puddey and Lake (2014) claim that the performance of residents significantly correlates with their Grade Point Average (GPA) scores. A similar study by Salem, Al-Mously, AlFadil and Baalash (2016) confirms other findings about the relationship between the GPA and clinical performance in residency programs in Saudi Arabia. However, McManus, Richards, Winder and Sproston (1998) argue that the validity of final medical exams is questionable since this type of assessment is not linked to clinical experience. However, it has been demonstrated that the final medical exams, which takes place at the end of every study year, can predict clinical performance and psychomotor skills (Martin & Jolly, 2001; Mitchell, Henderson, Groves, Dalton, & Nulty, 2009). Despite the findings indicating that academic achievement is a key attribute of medical graduates, Lindberg (2013) argues that, as medical degrees are routinely earned by all medical graduates after fulfilling all the degree requirements, employers do not pay significant attention to academic achievement in their recruitment. This could be because, as the author argued, employers implicitly trust HEIs to have prepared medical students for the labor market. Thus, Lindberg (2013) asserts, apart from the medical degree, employers must look at other attributes to check the suitability of the candidate for the hospital. In other words, claimed Lindberg (2013), medical graduates should possess attributes beyond their medical degree.

A study conducted by Post et al. (2015) measuring the attributes that employers of pathologists most value reveals that they emphasize work ethics, professionalism,

communication skills, lifelong learning, and group work over career motivation, work style and technical proficiency. Moreover, according to the Scottish Doctor Framework, medical graduates must to a great extent be effective communicators with their colleagues, management, the media, patients and their families, and as teachers (Simpson et al., 2002). Indeed, patients seek strong leadership, good communication skills and responsibility in a physician (Coulter & Fitzpatrick, 2000). Indeed, one study claimed that a lack of communication skills is one of the reasons for medical negligence (Levinson, 1997). In addition, Ambady et al. (2002) claim that most medical lawsuits against physicians are due to physicians raising their voices with patients.

Although obtaining clinical/practical skills and medical knowledge is key for every medical graduate, they must be able to integrate skills with knowledge to make suitable medical decisions. In other words, medical graduates should be able to decide whether a procedure is beneficial and necessary for treating an illness (O'Donnabhain & Friedman, 2018). An Australian study showed that mortality rates increase in hospitals when interns start their training programs in August (Jen, Bottle, Majeed, Bell, & Aylin, 2009). Similarly, to emphasize this skill, in the Scottish Doctor framework, a separate domain is designed for decision-making skills and clinical reasoning and judgment (Simpson et al., 2002), demonstrating the importance of this particular skill for the quality of medical graduates. Indeed, patients look for a doctor who effectively listens to patients, discusses diagnoses and treatments, and involves patients in their treatment decision making (Coulter & Fitzpatrick, 2000; Hurwitz, 2002; Jung, Wensing, & Grol, 1998).

Post et al. (2015) claim that employers seek candidates who can work hard and are flexible in the way they handle responsibilities. Taylor (1999) notes that graduates often demonstrate a lack of patience and an expectation of random and rapid promotion at work. Some employers, in addition, are frustrated with the tendency of some medical job seekers to look for an unrealistic salary and working hours (Post et al., 2015). Medical graduates should show commitment to work regardless of salary and working hours.

Generally speaking, a high-quality medical graduate possesses adequate professionalism, ethics, communication skills, teamwork skills, and flexibility. However, despite the fact that soft skills are critical for medical graduates, Lindberg (2013) emphasizes that medical graduates should show a balance in these skills. He clarified this by saying that a good medical graduate should work hard but not burn out, and should demonstrate autonomy but

also an ability to follow specific rules and regulations.

Lindberg (2013) asserts that the most suitable graduate for the medical labor market possesses a balance of performance and human interaction. Graduates need to effectively and politely deal with all manner of patients at the hospital and at the same time show a satisfactory level of medical performance. However, the author added that possessing this balance is not necessarily a guarantee that a graduate will secure a job. A graduate needs to compete with other graduates entering the labor market by proving that he or she has performed the best in certain attributes.

Employers sometimes refuse to recruit unknown medical graduates, believing that graduates should devote effort to building a professional network within the medical field (Post et al., 2015). These authors (p.5) reveal that medical employers will reject any candidate who demonstrates any of a number of deficiencies: 1) ‘poor interpersonal skills’; 2) ‘poor references’; and 3) ‘gaps in employment and/or frequent job changes. The authors added that medical training and residency programs are the perfect places and environment to build networks. Indeed, training/internship programs substitute for work experience for medical graduates. Lindberg (2013) asserts that graduates seeking residency programs need to show an interest in a specific medical specialization and/or possess non-medical experience needed in the workplace, such as computer skills. As residency programs are additional training specific to a medical specialization, fellowship programs are further training for a continuing specialization. For employers, fellowship programs are unnecessary and do not add to the profile of medical graduates in the labor market (Post et al., 2015).

Crossman and Clarke (2010) add that gaining international experience abroad is more valuable than interacting with international students and/or staff locally. Indeed, opportunities to gain international experiences in medical training/internships are widely available for medical students. Although medical training scholarships, mostly to advanced western countries, are common in Saudi Arabia, a recent study showed that Saudi medical students prefer to undertake their medical training locally rather than abroad (AlShahrani et al., 2015). According to Crossman and Clarke (2010, p. 607), the benefits of international experience for graduates are “experiential learning, additional language acquisition, and finally the development of soft skills.”

As part of preparing students for the labor market, The Commission on Dental Accreditation

(CODA) specifies that dental students are required to be able to handle patients with special needs to demonstrate quality (Accreditation CoD, 2004). Students trained to deliver proper examinations of and treatment to patients with special needs demonstrate the high quality of graduates. Although this skill is a quality attribute of graduates, it has been reported that dental students are not adequately prepared to do it and that existing curricula provide insufficient training for it (Alumran et al., 2018; Fenton, Hood, Holder, May, & Mouradian, 2003; Waldman & Perlman, 2002). Alumran et al. (2018) conclude that a lack of training in dealing with patients with special needs and the failure of students to attain this skill could lead to improper medical services being delivered, potentially causing medical complications and increasing the cost burden to patients with special needs.

Moreover, one study showed that employers look for freshly graduated pathologists who possess anatomic pathology skills, clinical pathology skills, and health informatics competency (Horowitz, 2006). According to the author of this study, employers also require graduates to be knowledgeable in the area of quality assurance. Indeed, a study by Kass et al. (2007) shows that from the perspective of the labor market, pathologist graduates are not prepared in the areas of quality compliance, laboratory management or billing/coding procedures.

From the perspective of employers, for a medical graduate to show suitability for a particular workplace, job interviews and CV skills need to be demonstrated effectively (Lindberg, 2013). The author added that job interviews help to determine whether a candidate possesses medical workplace-related attributes. Interviews and CVs are critical components for judging the suitability of a job seeker. CVs and interviews infer a candidate's personal attributes, indicating the importance of medical graduates possessing them (Lindberg, 2013).

In summary, Lindberg (2013) concludes that a balance of soft skills, clinical skills and medical knowledge is necessary for demonstrating graduates' suitability for entering the medical labor market. A high-quality medical graduate demonstrates a balance of a variety of skills and competencies crucial for the medical labor market. The next section discusses further the essential attributes of medical graduates and it also reviews the available frameworks and models of competencies in the literature.

3.4.3 Competency frameworks in medical education

A number of studies in the literature have created competency frameworks for medical graduates from the perspective of employers (Alanazi, 2012; Kilner, 2004; O'Brien, Hartley,

Dawson, Quick, & Moore, 2013; Williams, 2011; Williams, Onsmann, & Brown, 2010). A Saudi Arabian study by Alanazi (2012) finds that paramedic employers value the following competencies in their staff: safety, communication skills, critical thinking, assessment, scene management, clinical skills, professionalism, team approach, teaching skills and research skills. Another recent study in Saudi Arabia developed a model of paramedics' core competencies consisting of five factors: professionalism, communication skills, personal skills, clinical skills and preparedness (AlShammari, Jennings and Williams, 2019). In the United Kingdom, Kilner (2004) finds that paramedic employers seek candidates who possess the following competencies: clinical skills, professionalism, personal qualities, knowledge base, clinical decision making, mentoring and clinical supervision, intellectual skills, communication skills, management ability, learning and professional development, assessment and medical history taking, driving, self-awareness, educational background, and policy/guidelines. In Australia, Williams (2011) concludes that paramedic employers value the following competencies in graduates: personal behavior and attitudes, patient interaction and welfare, scientific approach to patient care, paramedics and society, commitment to professional and healthcare outcomes, professional behavior, and interaction skills. However, these frameworks were designed particularly for paramedics working in emergency service departments. There is still a need to go deeper and develop insights into the core attributes of medical graduates, as valued by medical employers in a variety of specialties.

A rich variety of competency frameworks has been established for medical programs across the world. Examples of these framework include CanMEDS, the Dundee Outcome Model, Outcomes for Graduates (formerly Tomorrow's Doctors), the Scottish Doctor, Global Minimum Essential Requirements published by the Institute for International Medical Education, and the ACGME Core Competencies devised by the Accreditation Council for Graduate Medical Education for residency programs (ACGME, 2001; Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Zaini et al., 2011). Table 8 summarizes these frameworks with their corresponding domains. The Scottish framework was introduced building on the views of faculty members and students in five medical schools in Scotland (Simpson et al., 2002). Most relevant to this study is the SaudiMeds framework (see Chapter 2).

Table 8

Competency Frameworks in Medical Education

Framework	Country	Domains
CanMEDS 2005	Canada (Developed by the Royal College of Physicians and Surgeons of Canada)	1. Medical expert 2. Communicator 3. Collaborator 4. Manager 5. Health advocate 6. Scholar 7. Professional
Outcomes for Graduates	United Kingdom (Developed by the General Medical Council)	1. Professional values and behavior 2. Professional skills 3. Professional knowledge
Scottish Doctor	Scotland (Developed by the Scottish Deans' Medical Curriculum Group)	1. Outcomes for clinical skills 2. Outcomes for practical procedures 3. Outcomes for patient management 4. Outcomes for patient investigation 5. Outcomes for health promotion and disease prevention 6. Outcomes for communication 7. Outcomes for medical informatics 8. Outcomes for basic, social and clinical sciences and underlying principles 9. Outcomes for attitudes, ethical understanding and legal responsibilities 10. Outcomes for decision-making skills and clinical reasoning and judgment 11. Outcomes for the role of the doctor within a health service 12. Outcomes for personal development
ACGME Core Competencies	United States (Developed by the	1. Practice-based learning and improvement 2. Patient care and procedural skills

	Accreditation Council for Graduate Medical Education for residency programs)	3. Systems-based practice 4. Medical knowledge 5. Interpersonal and communication skills 6. Professionalism
SaudiMeds	Saudi Arabia (Developed by the Saudi Medical Deans Committee)	1. Doctor and practice 2. Doctor and patient care 3. Doctor and the community 4. Doctor and communication skills 5. Doctor and professionalism 6. Doctor and IT 7. Doctor and research

In Saudi Arabia, the NQF, developed by the NCAAA, addresses the core qualifications that every university graduate should obtain. The framework was designed for all graduates regardless of discipline and it encompasses five domains: knowledge; cognitive skills; interpersonal skills and responsibility; communication, IT and numerical skills; and psychomotor skills (see Chapter 2). In 2011, the Saudi Medical Deans Committee produced a national competency-based framework to specify competencies for medical graduates. It was called the SaudiMeds Framework, and it consisted of seven domains (see Table 3 in Chapter 2). (Zaini et al., 2011). This framework was built from the perspective of academics in Saudi universities. As noted earlier, however, it is essential to expand the scope of this framework to include the voices of employers in terms of specifying competencies deemed requirements for the labor market.

3.5 Chapter Summary

This literature review has revealed that notions of quality in HE, as well as the quality attributes and competencies of graduates, are very debatable. No single set of quality attributes in HE exists. The expectations of HE vary depending on the viewpoint of the stakeholder, as every stakeholder group has its own thoughts and ideas about HE. The purpose of this chapter was to explore the available models of quality in HE. It has been concluded that the vast majority of the studies in the literature focus on students and/or faculty members (Abbas, 2020; Asif et al., 2013; Hossain & Hossain, 2019; Latif et al., 2017; Noaman et al., 2017) (see Table 7 in Section 3.2), whereas the employers' perspective has

been overlooked. Kundu (2016) asserts that over-reliance on one point of view, in relation to measuring quality, could be problematic. Therefore, the inclusion of a wide range of stakeholders has led to the need to develop diverse measurements and evaluation methodologies. This is why it is important to seek the perspectives of all stakeholders in HE, in order to reach a definite view of quality.

The purpose of this study is to propose a new quality model for HE from the perspective of medical employers in Saudi Arabia, in line with the service quality approach. In doing so, it is anticipated that the study will offer helpful insights into how medical graduates can prepare for the labor market and how universities can support this process. The next chapter, setting out the study's methodology, discusses the research design adopted by the study and the research methods utilized to accomplish the study's aims.

CHAPTER 4 RESEARCH METHODOLOGY

4.0 Introduction

This chapter elaborates on the methodology adopted in this study to meet the study's aims and answer the research questions. The aim of this study is to gain insights into how medical employers in Saudi Arabia conceptualize quality in HE and in medical graduates. The objective is to propose a new and comprehensive quality model from the perspective of employers. For that, the most suitable design for this aim was deemed to be a two-stage (qualitative and then quantitative) exploratory mixed-methods research. Initially, medical employers were approached to obtain their insights into quality in HE and their views on what constitute quality attributes in medical graduates. Then, a questionnaire was developed accordingly and administered to a larger population sample to generate greater generalizability in the interview findings.

This chapter discusses the stages taken to produce reliable and valid findings in pursuit of answers to the research questions. Section 4.1 reviews the epistemology that guided the methodology of the study. Considering the research questions of this study, the pragmatic position is believed to best suited to answering these questions and ultimately, the decision was made to adopt a mixed-methods research design (see Section 4.2). Sections 4.3 and 4.4 explore the methods utilized to answer the two research questions: semi-structured interviews in Section 4.3 and a survey in Section 4.4. These sections are broken down into several subsections that set out the aspects of sampling, designing, conducting and analyzing. Section 4.5 clarifies the measures taken to ensure that the study resulted in valid and reliable findings. Finally, Sections 4.6 and 4.7 explore the methodological limitations of the study and the steps taken to ensure that the study met rigorous ethical standards.

4.1 Research Paradigm

The way researchers think about the development of knowledge is called a research epistemology. The research objectives are the key determinants of the choice of research paradigm. Accordingly, the research paradigm underpins the study's research method, data collection procedures, and data analysis techniques (Saunders, Lewis, & Thornhill, 2019). A research paradigm comprises two concepts, ontology and epistemology, which together contain assumptions about how we think about and construct a research project. Ontology is concerned with reality, while epistemology is concerned with knowledge in the world

(Saunders et al., 2019).

There are two broad approaches to ontology – positivist and interpretivist. Positivism holds that there is a reality outside human experience and interpretation that can be known objectively when adopting a suitable research methodology (Creswell & Clark, 2017). These realities can be discovered using quantitative methods (Cohen, Manion, & Morrison, 2002). In contrast, interpretivist ontology holds that there is no one single objective reality, but rather multiple realities based on individual experience, perception and interpretation by humans and how those humans make meanings from their environment (Saunders et al., 2019). Interpretivism is more associated with qualitative studies. In other words, our social world is socially constructed by human action, and as such is not knowable objectively in the same way that natural phenomena can be identified and measured.

With regard to the research methodology that follows from these approaches to a research paradigm, positivist researchers, believing that a singular social world is empirically observable and knowable, utilize statistical and mathematical ('quantitative') instruments to measure and predict social phenomena (Creswell & Clark, 2017). Studies following Positivism often lack depth and richness of findings, as researchers are less engaged in the data collection because of the nature of the data they collect. Positivists are more engaged with numeric and quantifiable data and their interpretations of the findings are quite narrow. Positivism assumes that knowledge is objective and independent and that therefore interpretation by the researcher is not required. In contrast, interpretivist/constructivist researchers, believing that subjective human experience and perception underpin social reality, employ tools to explore human experiences and ways of meaning making (i.e., 'qualitative' methods) (Lincoln & Guba, 1985). The knowledge is interpreted but cannot be measured or generalized to a wider population.

In-between these two paradigms, social scientists such as Punch (2009) have proposed that a pragmatic research design can benefit from the advantages of both paradigms in order to strengthen data collection (Tashakkori & Teddlie, 2003). Pragmatism, the most common paradigm underpinning mixed-methods research studies (Johnson & Onwuegbuzie, 2004; Punch, 2009), allows researchers to draw on both quantitative and qualitative methods where and as they see fit in their research (Creswell & Clark, 2017; Tashakkori & Teddlie, 2009). In the pragmatic approach, decisions over research methods are made based on a 'pragmatic' understanding of the study's aims and research questions, rather than being dictated by rigid

adherence to a particular philosophical orthodoxy. According to pragmatism, researchers can use both quantitative and qualitative data collection methodologies to accomplish the research aim (Creswell & Clark, 2017; Punch, 2009). The research begins by identifying themes, testing those themes, and then explaining the findings (Johnson & Onwuegbuzie, 2004). Hence, mixed-methods studies do not rely on a single paradigm but instead integrate aspects of different ones (Punch, 2009). According to Creswell and Clark (2017), the ideal epistemological paradigm for an exploratory mixed- methods design is constructivist for the first (qualitative) stage and positivist for the second (quantitative) stage. In other words, the research starts the study qualitatively following a constructivist paradigm and then shifts to a more positivist approach when moving on to the quantitative data collection.

After elaborating on the main research philosophies, it was deemed that pragmatism was most suitable for this thesis. Given that the literature provides only a limited employers' perspective of the quality of medical education and medical graduates, there is a need to reach employers in order to understand their perceptions of quality in medical education. Relying on a quantitative approach to understand employers' views is insufficient due to the lack of references in the literature. A decision was thus made to initiate the data collection with interviews to gain insights into employers' perspectives of the quality of medical education, using the data gathered in this stage to help develop the questionnaire. For this, pragmatism is the most helpful paradigm to guide the mixed-methods research design adopted in this study.

4.2 Research Design

This study employs a mixed-methods research design, integrating the strengths of both qualitative and quantitative research methods and at the same time minimizing the drawbacks of each (Greene, Caracelli, & Graham, 1989; Punch, 2009). Tashakkori and Teddlie (1998) assert that mixed-methods research is distinguished by its mix of different quantitative and qualitative methodological approaches in terms of methods, paradigms, and data interpretation. According to Johnson, Onwuegbuzie, and Turner (2007), the 'mixing' of mixed-methods research could occur at the data collection stage, the data analysis stage, or at all research stages. The strengths of mixed-methods studies lie in their ability to produce findings with greater validity due to the triangulation of data collection and analysis. Triangulation concerns using two or more different data collection methods in a single study where one method bridges the weaknesses of the other (Flick, 2009).

In particular, an exploratory mixed-methods study design was adopted in the current research to meet the study's aims. This type of design is commonly used in studies aiming to develop a theory or an instrument (Creswell & Clark, 2017). Typically, in exploratory designs, studies start with an emphasis on qualitative data collection, followed by quantitative data collection (Creswell & Clark, 2017). This is the approach taken by this study. The data collection was conducted in two research stages: semi-structured interviews (qualitative) (see Section 4.3) followed by a survey (quantitative) (see Section 4.4). These two methods went through extensive stages of planning, designing, testing and ultimately actual administration to ensure that the data collection yielded reliable and valid findings. The validity and reliability of the instrument is proven by the reliability and validity of the resulting findings (see Section 4.5).

Greater emphasis was placed on the qualitative phase, with the quantitative phase seeking to obtain a broader sense of the views of a larger participant cohort. This approach is very common in mixed-method studies, especially when a gap in knowledge exists (Gray, 2014). Given the lack of attention paid in previous studies to employers' views about quality in HE and medical graduates, in the first phase of the model employers at hospitals were interviewed for their views. Employers at a variety of both public and private hospitals in Saudi Arabia were approached for this information. The interviews were carried out to develop a sense of what attributes and medical educational experiences employers value. The interviews were semi-structured and an interview schedule was used to guide the conversations (see Section 4.3). In the second stage, a survey was used to compare and generalize the findings of the first stage (see Section 4.4).

The majority of studies conducted to develop quality models adopt a mixed-method design (e.g Abbas, 2020; Annamdevula & Bellamkonda, 2012; Latif et al., 2017; Noaman et al., 2017; Teeroovengadum et al., 2016). However, most of these studies utilized a focus group instrument in the first phase for data collection (e.g Abbas, 2020; Annamdevula & Bellamkonda, 2012; Latif et al., 2017). Instead, in this study, a decision was made to collect qualitative data using semi-structured interviews. This decision was made because interviews are more feasible in terms of finding interview slots to fit physicians' busy schedules. AlAamri et al. (2020) conclude that the majority of studies developing quality models use questionnaires alone to build the model. The authors suggest that research should incorporate additional methods, such as focus groups or interviews, when developing models to validate results. A review of available quality models in the literature by Ramaiyah et al. (2007)

concludes that the most effective method for addressing quality dimensions is to interview stakeholders. Hence the current study began with interviews to garner insight into employers' views about the quality attributes of medical graduates.

4.2.1 Gaining access and sample selection

The target population of this study is medical employers working at public and private hospitals in Saudi Arabia. Essentially, any physician currently in medical employment at a hospital who possibly recruits medical graduates is a potential participant. These physicians are current employers and recruiters of medical graduates from Saudi universities. The medical employers who have already been through medical studies and experienced the actual medical labor market would have an overview and perspective of how medical education and graduates should be in order to demonstrate high quality. At the interview stage, only medical department heads were approached as they had the potential to provide valuable information that could help to answer the research questions (see Section 4.3.3). This in turn would help to develop the questionnaire for the survey stage. Medical department heads are usually involved in the process and decision making of recruiting new physicians and they often conduct job interviews, along with the human resources department. In the survey stage, the participants could be either medical department heads who supervised a team of physicians or a colleague who would potentially supervise a newly graduated medical student (see Section 4.4.3).

Besides the ethical approval granted by Durham University, additional approval to conduct this study was obtained from Imam Abdulrahman Bin Faisal University, the sponsors of the research. An official letter indicating this approval was obtained from the university to help gain access to hospitals for data collection. Most hospitals were easily accessible and welcoming.

As noted (see Section 4.2), mixed-methods studies comprise mixed sampling techniques. In this study, two distinct sampling techniques were followed, one for each phase. Purposive sampling was adopted to recruit participants for the interview phase (see Section 4.3.3), and non-probability convenient sampling was adopted to recruit participants for the survey (see Section 4.4.3). The intention was to ensure that both public and private hospitals were targeted to participate in the study.

4.3 Stage 1: Semi-structured Interviews

In the first stage, a decision was made to collect data using interviews simply because this method served the purpose of this stage. Since the available quality standards being acted on in Saudi Arabia lack awareness of employers' perspective and needs, they were interviewed in order to garner their insights into graduates' attributes and the quality image of the university. The main purpose of the interviews was to obtain the perspectives of employers about the quality attributes of universities and medical graduates, to assist with developing the questionnaire for the second stage of the study (see Section 4.4). Although interviews can be time consuming (Bell & Waters, 2014), this type of research method served well in terms of gathering information to answer the research questions. Indeed, Punch (2009) holds that research studies rely heavily on interviews as a research method to generate qualitative data in order to understand a new situation or the perceptions of a new group of people, which this stage of the study was concerned with. Therefore, interviews were used to explore the employers' perceptions of the quality of medical education and medical graduates, something that would be impossible to capture using the rigid structure of a questionnaire, where there is limited space for freedom of expression or opinions. Actually, interviews are characterized as a flexible means of obtaining the requisite data from respondents as they generate rich data from a smaller group of participants compared to quantitative data methods (Punch, 2009).

In semi-structured interviews, sometimes called 'focused interviews', interviewees are given some flexibility under a specific subject, but a predetermined list of questions is prepared beforehand to control the scope and direction of the conversation during the interview. Indeed, the study targets department heads who are used to being in charge and being listened to, and it is suggested that semi-structured interviews should be used when interviewing experts (Bogner, Littig, & Menz, 2018). The reason is that they enable researchers to conduct open interviews where interviewees can speak freely, while the interviewer guides the conversation while referring to a set of predetermined interview questions. Unlike structured interviews, semi-structured interviews have a degree of flexibility in the form of permitting 'follow-up' questions not included in the predetermined interview schedule to probe the interviewees on any interesting points raised (Punch, 2009).

4.3.1 Interview data collection process

Regardless of the type of interview adopted, preparation of the questions is essential (Bell & Waters, 2014). The questions should be prepared and ordered in a logical way to allow the interview conversation to flow as smoothly as possible. The data collection for the first phase commenced in January 2019 and lasted for two months. Because the participants were

medical department heads, it was quite challenging to fit interview slots into their busy schedules.

An interview schedule was developed beforehand and each interview lasted approximately 1 hour. The interview schedule was built on 11 questions, starting with the general and then narrowing down to more specific ones. The questions were grouped into four categories: general, specific to quality in medical education, specific to quality of medical graduates and conclusion (for more details, see Appendix C). A decision was made to conduct the interviews in Arabic so as to create a comfortable atmosphere for the interviewees (unless the interviewee was a non-Arab native speaker, in which case the interview was conducted in English).

In contrast to structured interviews, where notetaking is deemed adequate to record the interviewees' responses, other means of recording responses are used with open-ended questions (Punch, 2009). In this study, audio recording was used for subsequent transcription and translation into English (with Arab interviewees). Bell and Waters (2014) suggest that tape recordings of interviews can enhance the accuracy of the data gathered. In the event that a participant refused to be recorded, notes were taken as much as possible and time was given over to reviewing the notes immediately after each interview. In actual fact, this happened with only one female interviewee, who preferred not to be recorded. Her decision was probably a cultural preference. Her request was respected and notes were taken during the interview. It is essential that notetaking skills are attained before the interview in order to be prepared for any circumstances that might be encountered during the interview stage. Consent to record the interviews was obtained from the interviewees before commencing recording (see Section 4.6).

All the recordings were transcribed directly into English afterwards to prepare the data for analysis (see Appendix D for an example of the transcription). Interviews that last for one hour take four hours to convert and transcribe into a written piece (Bell & Waters, 2014). There was no intention to capture any specific behavioral aspects of the participants. Therefore, the translation of the narratives did not affect the validity of the transcriptions. The transcribed pieces were checked against the interview recording for accuracy. For further testing of the transcription and translation validity, a certified translator/transcriber reviewed a sample of the transcribed pieces. In addition, after the transcriptions were completed, the participants were given a chance to review the transcripts to ask that any parts be omitted

from the transcription, if they so wished, and to ensure the trustworthiness of the data gathered (Bloomberg & Volpe, 2016). Indeed, giving the participants an opportunity to review the transcribed interviews helps the researcher to prevent and/or eliminate any bias involved in the transcription (Bloomberg & Volpe, 2016). However, none of the interviewees replied to the emails sent to them, implying that they were satisfied with how the interviews had gone.

In this study, the interview process did not go through pilot studies to test the face validity of the interview questions prior to the actual data collection. It was assumed that follow-up questions could be raised in the interviews if needed. However, it is critical to take into account the language and wording of the questions to ensure their clarity for the participants (Bell & Waters, 2014). Interviews provide an excellent opportunity for the interviewer to clarify any misunderstood questions at any point during the interview, which cannot be done with questionnaires. In this regard, the supervisory team and a quality director for validity testing were consulted over the questions to seek several perspectives about the alignment between the interview questions and the research questions. Additionally, to prevent bias in the reporting of the data, some actions were taken to ensure the validity of the interview findings (see following section and see Section 4.5.1).

4.3.2 Avoiding interview bias

There are a number of issues surrounding interviews as a research tool that require attention. For Punch (2009, p.152), “interviewer bias, and effects, the accuracy of respondents’ memories, people’s response tendencies, dishonesty, self-deception and social desirability” is very common in any course of interviews. Indeed, bias can occur in any of several stages throughout a research study discussing the literature, conducting interviews and/or interpreting gathered data (Bell & Waters, 2014). However, the effect of these issues on the validity of the data gathered in interviews should not be ignored. According to Bell and Waters (2014), the effect of bias increases when one researcher conducts the interviews, in contrast to when multiple researchers conduct interviews. Indeed, the greatest risk of bias is perhaps when the researcher is fully knowledgeable about the subject matter of the interview (Bell & Waters, 2014).

Punch (2009) asserts that these issues could be overcome or prevented with proper training and planning. Caution was taken when reporting the interview data with continuous self-reflection about bias (Bloomberg & Volpe, 2016) to avoid reporting selective data and/or

personal views. Indeed, these potential obstacles were taken into consideration by developing an interview schedule and revising it several times to reach an acceptable level of confidence. In addition, the interview questions were devised as broadly as possible to avoid yes/no responses, something that might direct the participants' responses to being in accordance with the researcher's desires ('leading questions'). Bloomberg and Volpe (2016) believe that credibility criteria are key to evaluating the trustworthiness of gathered data, specifically to ensure that the data are as bias-free as possible. According to the authors, this could be done through member checks where the transcribed data are checked by a colleague (see Section 4.5.1). Additionally, Bell and Waters (2014) and Bloomberg and Volpe (2016) argue that data triangulation is a proper way to overcome potential bias in interviews. Indeed, given the mixed-methods approach of this study, the interviews were followed by a survey to obtain a greater understanding from a larger population. The survey results are intended to support the interview findings. Thus, minimal bias was involved in the interview phase.

In addition, in order to overcome the language barrier, which would probably affect the accuracy of the data gathered, a decision was made to conduct the interviews in Arabic so as to create a comfortable atmosphere. For non-native Arab speakers, English language was used. Using the participants' mother tongue would probably allow the discussion to progress smoothly. For this reason, the interview schedule was translated into Arabic to be used with Arab participants. However, the consent form and participant information sheet were not translated into Arabic, as it was anticipated that medical professionals would be proficient in English.

4.3.3 Interview sampling technique

The population of this study is the employers of medical graduates. Purposive sampling was adopted to collect samples from this population. Although sampling in qualitative methods differs from quantitative data collection methods, sampling is as critical for qualitative data collection as it is for quantitative. However, qualitative sampling does not involve probability sampling but is rather purposive sampling, where the selection of the population is made for the sake of the study purpose (Punch, 2009). In purposive sampling, participants who are most knowledgeable and able to provide rich data are recruited for the data collection (Maxewell, 1997). Accordingly, the medical directors at the participating hospitals were asked to nominate participants who best suited the study in terms of ensuring informative interviews. All of the interview participants were medical department heads. Caution was taken to ensure that the selected employers were from different specialties from a variety of

public and private hospitals in the Eastern Province of Saudi Arabia.

Marshall, Cardon, Poddar and Fontenot (2013) assert that qualitative data collection is ambiguous as no clear standards are available to guide the qualitative methodology. There is no global rule for the number of participants in qualitative data collection (Marshall et al., 2013; Punch, 2009). It is also difficult to give an approximate sample size for interviews before the actual data collection, unlike questionnaires (Boddy, 2016; Guetterman, 2015; Schreier, 2018). According to Schreier (2018) and Crouch and Mckenzie (2006), collecting data from appropriate participants who would provide valuable data is more important than the sample size.

However, the number of suggested interviews should be sufficient to allow for the collection of valid and reliable data. Indeed, the interviews end when no more information can be garnered from the participants. This is known as ‘saturation of information’, whereby researchers reach the point of gathering redundant data from the participants (Boddy, 2016; Schreier 2018; Schwandt, 2001). Data saturation is in fact related to reaching an adequate number of interview participants. Although Boddy (2016) contends that data saturation is critical in qualitative research, asserting that there are no standards on the sample size sufficient to reach saturation. Indeed, the estimated sample size needed to reach data saturation is influenced by the quality of the interviews and the sampling procedures (Brinkmann & Kvale, 2018). However, some qualitative researchers have suggested that an acceptable range of qualitative method sample size is 12–15 participants (Boddy, 2016), 6–9 participants (Krueger, 2000), and 6–12 participants (Johnson & Christensen, 2008), and targeting more than 30 participants is considered unfeasible in terms of time and data analysis (Boddy, 2016). Indeed, Marshall et al. (2013) did not find any significant positive influence of having 30 participants on the validity of qualitative data. In the initial stages of this study, the anticipated sample size was around 15 interviewees, while the actual data collection was completed with 14 good interviews. According to the above justification for this stage’s sample size, this study followed a mixed-method research design where the questionnaire stage was designed to complement and support the qualitative findings and contribute to building valid and reliable findings (see Section 4.5.2).

4.3.4 Interview participant sample

Employers at public and private hospitals were approached to participate in the interviews to contribute to the development of a quality model in HE. The Eastern Province in Saudi

Arabia, where the study took place, has 31 private and public hospitals. The participants in this study came from five (16.13%) of these hospitals (two private and three public). The sample size was 14 participants, all of whom were medical department heads.

Although the interviews were semi-structured following a predetermined set of questions, Gillham (2000) warns that having experts as interviewees could push the interview conversation off track. Although semi-structured interviews are quite flexible as there is no need to strictly follow a set of questions, efforts were taken in the interviews to keep the discussion focused on quality in HE and medical graduates. Moreover, Abels and Behrens (2009) claim that experts as interviewees often demonstrate a feeling of superiority, especially with young female interviewers. Bogner et al. (2018) suggest that in order to avoid issues when interviewing experts, the interviewer also needs to be an expert and well prepared. In this study, no issues were encountered during the interviews with department heads as the interviews proceeded smoothly.

Table 9 summarizes the profile of each participant in the interviews. The profile contains the name, gender, nationality, hospital sector and medical specialty of the participant. The participants' real names are concealed and pseudonyms were used to ensure that their identities were anonymous.

Table 9

Profile of Interview Participants

	Name	Gender	Nationality	Sector	Specialty	Remarks
1	Dr. Rayan	Male	Egyptian	Private	Internal Medicine	
2	Dr. Hasan	Male	Tunisian	Private	Emergency	
3	Dr. Sami	Male	Tunisian	Private	Orthopedic	
4	Dr. Yousef	Male	Saudi	Private	Pediatric	Faculty member at a university

5	Dr. Reem	Female	Egyptian	Private	Dermatologist	
6	Dr. Hakim	Male	Syrian	Public	Emergency	
7	Dr. Lina	Female	Saudi	Public	ENT	
8	Dr. Adel	Male	Saudi	Public	Surgery	
9	Dr. Adam	Male	Egyptian	Private	-	
10	Dr. Fawaz	Male	Saudi	Public	Pediatric Surgery	
11	Dr. Bayan	Female	Saudi	Public	Ophthalmologist	
12	Dr. Sayed	Male	Egyptian	Private	Surgery	
13	Dr. Mazin	Male	Saudi	Private	-	
14	Dr. Faisal	Male	Saudi	Public	-	

Following the interviews, a questionnaire instrument was developed based on the interview findings to capture the views of a wider cross-section of the medical employer population, as detailed below.

4.3.5 Interview qualitative data analysis: thematic analysis

Regarding the analysis and reporting of the data, thematic analysis was employed to analyze the interview data using NVivo 12 software. Boyatzis (1998) defines thematic analysis as an approach to extracting themes from a set of qualitative data, and reporting and interpreting the findings according to the extracted themes.

Thematic analysis can be conducted in three distinct ways: inductively, deductively or abductively. Inductive analysis is achieved without any influence of existing theoretical constructs from the literature, deductive analysis is performed to answer specific research questions and to fit new insights into the literature, and abductive analysis is a novel way of analysis that combines the aspects of both the inductive and deductive approaches (Braun & Clarke, 2006).

For this study, abductive thematic analysis was adopted, consisting of deductive and inductive elements. Indeed, it is believed that abductive analysis is linked to pragmatism (see Section 4.1) (Brinkmann & Kvale, 2018). The deductive element was utilized in this study to analyze the interview data and link it to the findings from the reviewed literature (Bloomberg & Volpe, 2016). This type of thematic analysis is also referred to as theoretical, or ‘top down’ analysis (Braun & Clarke, 2006). In the deductive approach, the analysis of data is driven and influenced by a conceptual framework and/or the research questions (Bloomberg & Volpe, 2016; Braun & Clarke, 2006). Indeed, in this study, the thematic analysis of the data was initially influenced by the literature on quality in HE and the employability of graduates. Additionally, the data relevant to the research questions were extracted and grouped into themes to help answer the questions and generate new findings to contribute to the literature. This implies that there is also an inductive element in the analysis of the data. Unlike deductive analysis, with inductive analysis, researchers tend to analyze qualitative data without any influence or impact and indeed research questions emerge after reviewing the initial data analysis (Braun & Clarke, 2006). However, with deductive analysis, the influence of the researcher must be minimal so that the purpose of qualitative data collection in terms of openly understanding and gaining insight into a new perspective is not damaged (Bloomberg & Volpe, 2016). Bloomberg and Volpe (2016, p.192) contend that although conceptual frameworks and research questions guide deductive thematic analysis, the researcher must be “flexible and open to the unexpected, allowing the analytic direction of the study to emerge.” Therefore, abductive analysis was the most suitable analysis strategy for this study. The thematic analysis was influenced by the literature review and conceptual framework for forming the initial themes, yet new quality attributes and themes also emerged, adding new knowledge to the literature. The former is a deductive element, while the latter is inductive.

I carried out the transcription myself, and therefore I had an idea of the text I was working with. I went through the text thoroughly to recall the content of the transcriptions prior to starting the analysis. Preliminary analysis was conducted on a number of transcriptions when I was half way through translating the recordings. I had a sense of saturation while analyzing the data, having reached a point where no additional codes were being generated. This confirms that data saturation had been reached by the end of the data collection from the interviews. In the interviews, the questions about how to define quality elicited responses that were going in different directions. Most responses were more relevant to how to improve quality in HE. The participants responded to the quality definition from their own perspective, namely, how to improve quality. However, it could be interpreted that from their perspective, these areas of improvements are actually quality indicators that need to be paid attention if improvement is to be made.

Analysis and code generation were done on a case-by-case basis, as advocated by Braun and Clarke (2006). Although Bryman (2001) suggested grouping the cases in a way that helps to answer the research questions, this does not apply to this study. Following the approach of Braun and Clarke (2006), this study's thematic analysis went through six steps: familiarization with the data, generating the codes, looking for themes, reviewing themes, defining themes, and reporting the findings. Undertaking the transcription of the interview recordings helped me to familiarize myself with the data for analysis, and preliminary codes were generated throughout the transcription process. The codes were assigned to relevant narratives and the narratives were grouped into categories and then themes. Relevant codes were grouped together to form categories, and consequently related categories were grouped to form a theme. In other words, data were categorized into different codes to create different subthemes that were eventually formulated into general themes. The themes were not generated based on how frequently they occurred in the data but rather on their significance in terms of answering the research questions or generating information and insights (Braun & Clarke, 2006). Initially, 893 codes were generated from the interview data. After a continuous cycle of coding and recoding, a final set of codes and themes was produced.

Due to the structure of the interview schedule and in order to easily answer the two research questions, the qualitative data were grouped into two datasets: 1) pertaining to HE quality and 2) pertaining to medical graduate quality. A continuous cycling of data analysis for these two sets took place to obtain final satisfactory qualitative findings (see Appendix H). The data

were ultimately narrowed down to four themes, 12 categories and 12 codes to explain how employers conceptualize quality in HE, and to three themes comprising seven categories and 17 codes to explain how they define the quality of medical graduates (see Chapters 6 and 7). According to thematic analysis, the data analysis findings are usually reported in accordance with the generated themes. Therefore, the results of the qualitative data were reported accordingly (see Chapters 6 and 7). This analysis prepared the ground for developing the questionnaire for the second stage, as seen in the following section.

4.4 Stage 2: Survey

Generally speaking, samples in qualitative methods are not representative of the population, therefore generalizability in qualitative methods is quite problematic (Schreier, 2018). In the second stage of this study, a questionnaire was developed to capture the views of a wider sample of the population in order to generalize the study results. The questionnaire was devised in line with the findings of the interviews, following the NCAAA quality standards adopted in Saudi universities. The reason for choosing a questionnaire as the quantitative research method in this stage is that they are commonly used to frame dimensions, according to Punch (2009), which is what was required to develop the quality model. The questionnaire was designed to answer the first and second research questions of this study and to ultimately propose a quality model in HE from the perspective of medical employers.

Unlike interviews, questionnaires are quite often used to target larger groups of people for data collection; they also require less time (Punch, 2009). The purpose of this questionnaire was to gain a greater sense of medical employers' perspectives on the key quality attributes of HE and medical graduates in Saudi Arabia, thereby contributing to the development of a comprehensive quality model in HE.

4.4.1 Survey data collection process

The survey data collection in this stage commenced in June 2019 and it lasted for four months. The data collection was conducted using online and hard copy questionnaires (see Section 4.4.2). A survey was employed for the second stage in order to reach a higher number of participants than was possible in the first stage (see Section 4.4.3).

The questionnaire was administered at 17 hospitals – nine public and eight private – across Saudi Arabia. As the survey was mainly administered online, a questionnaire link was sent to the medical directors at the participating hospitals to share with all their physicians. The medical directors helped by sending reminder emails to physicians to encourage them to take

part. In addition, the instrument was sent by email to all the employers who had been interviewed. In the event of obstacles to data collection emerging, an option was offered to use a hard copy of the questionnaire, distributed to employers' offices, in order to overcome a possible low response rate. In addition, some medical directors helped by sending text messages to all medical and managerial staff to encourage them to take part, and several email reminders were sent out in order to increase the response rate and obtain as many responses as possible. In addition to contacting the hospitals, the online questionnaire link was distributed through WhatsApp, Twitter and LinkedIn, asking individuals to share the link with physicians and/or hospital managerial staff.

Three hospitals requested a hard copy of the questionnaire rather than the online questionnaire to distribute to their medical and managerial staff. The medical directors of these three hospitals believed that in order to motivate physicians to take part in the study it would be necessary to provide them with a paper questionnaire on their desks. However, an obstacle arose with the hard copy questionnaires, which was that some questions were left unanswered. Three paper questionnaires were not fully completed and were thus ineligible and excluded. A total of 66 hard copy questionnaires were retained. Among the 66 responses, the majority lacked some demographic data, specifically the questions about nationality, previous work experience and medical specialization. However, these responses were retained for the data analysis as the rest of the questionnaire had been thoroughly completed.

4.4.2 Questionnaire design and pilot study

The online questionnaire was designed using SmartSurvey.com. The questionnaire consisted of 63 Likert scale items, three multiple-choice questions, and one open-ended question (see Appendix E). A five-point Likert scale ranging from 5 (= very important) to 1 (= not important at all) was used to record the responses. These items were taken from the findings of the interviews, the NCAAA standards complied with in Saudi universities, and the literature review.

Two versions of the questionnaire were designed – one in Arabic and one in English – and the participants were able to choose the version that suited them. The questionnaire permitted employers to rate the importance of the suggested quality attributes of graduates and the university itself. At the end of the questionnaire, one open-ended question was presented to capture additional quality attributes of either HE or medical graduates that were valued by the employers. The questionnaire items were grouped into two parts, as set out here.

1) 48 Likert and two multiple-choice items were designed to measure the quality attributes of HEIs. This part allowed employers to rate the importance of suggested quality attributes pertaining to the university. In addition, the first multiple-choice question was designed to gain insights into employers' perspectives on university practices to build a good reputation, and the second multiple-choice question was designed to understand the ways in which employers preferred to get involved in HE.

2) 15 Likert items and one multiple-choice were designed to measure the quality attributes of medical graduates. This part permitted employers to rate the importance of suggested quality attributes pertaining to medical graduates. The multiple-choice question allowed employers to select the seven most powerful soft skills from among a list of 18 deemed essential for the medical labor market. Similar to the questionnaire items, this list of soft skills was taken from the findings of the interview stage, along with the literature.

The face validity of the questionnaire was assessed by consulting the supervisory team and a number of quality directors at Imam Abdulrahman Bin Faisal University. Additionally, a relatively small-scale pilot study was conducted to assess the validity of the questionnaire instrument prior to the actual commencement of the survey data collection. Pilot studies are initial studies prior to the actual commencement and they are conducted to help with planning and avoiding any faults in the actual study (In, 2017). Like an actual study, a pilot study also takes into account ethical considerations. Consent forms and participant information sheets were used and shared with the participants prior to data collection (In, 2017). However, the participants needed to be aware that they were taking part in a pilot study and not the actual study (In, 2017). Additionally, pilot studies of surveys are usually conducted to assess the time needed for a participant to complete the questions, as well as to detect any ambiguous parts in the questionnaire (Bell & Waters, 2014; In, 2017). If needed, modifications to the questionnaire statements and amendments to the overall questionnaire can take place on the basis of the pilot study results.

The pilot study took place one month before the actual questionnaire. The pilot participants were faculty members at a university because at this stage, it was assumed that the university staff would participate in the main study. The decision to exclude the third question that targeted faculty members was taken later. This is why the participants in the pilot study were university staff and not medical employers. Eight participants took part in the pilot study.

Cronbach's Alpha test was used to test the reliability of the questionnaire prior to setting the online questionnaire live for the actual data collection. This was done using SPSS Statistics 26 software. The reliability tests resulted in relatively low reliability values, especially for 1) University Administration, 2) Infrastructure Quality, 3) Faculty Members Quality, 4) Courses and Curriculum Quality, 5) Scientific Research Quality, and 6) Quality Assurance and Academic Accreditation (see Appendix F). This was probably because of the low number of participants in the pilot study. As In (2017) asserted, an inadequate number of participants in a pilot study can negatively impact the reliability values. To rectify this issue, actions were taken to modify and edit the questionnaire to elevate its reliability. One participant shared her thoughts about the questionnaire and pointed out some minor errors in terms of phrasing. Accordingly, the number of items was reduced with some redundant items being excluded and others merged to prevent questionnaire tiredness. Also, some items were rephrased to overcome confusion and ambiguity. This pilot study helped to enhance the questionnaire and the number of items on the HE scale was reduced from 62 items to 48 items, and on the medical graduate scale from 16 to 15 items. After an effective pilot study, the questionnaire eventually had a relatively high reliability, as demonstrated by running Cronbach's Alpha tests on the questionnaire scales after the actual data collection (see Chapter 8).

4.4.3 Survey sampling

In exploratory study designs, the sampling takes place at each stage and indeed the participants in the second (quantitative) stage must be different from those in the first (qualitative) stage (Creswell & Clark, 2017). The reason behind this is to achieve the purpose of the second stage in terms of generalizing the qualitative findings. Additionally, in order to achieve this purpose, the sample size of the second stage must be greater than that of the first stage (Creswell & Clark, 2017). Unlike qualitative data collection, the sample size in quantitative methods is more manageable and predictable. In the initial stages of this study, the expected sample size for the survey was a minimum of 100 participants. Gorard (2021, p. 127) notes that the sample size "does not have to be a certain proportion of the population. If a sample of 100 cases were considered appropriate for a particular study, it would be appropriate whether the population was 1,000 or 1,000,000". A representative sample size would help to make the conclusions of the study generalizable.

Anticipating sample size in survey data collection is linked directly to the number of variables being measured. Indeed, factor analysis, the statistical test used to analyze

quantitative data, requires a large sample size to avoid errors in reporting data (Yong & Pearce, 2013). Manly (2005) states that a large ratio of 20:1 is required, meaning that if a study has 20 items as a measurement, the ideal number of participants required would be 400. However, for exploratory factor analysis, such a sample size-item ratio can be considerable with smaller sample sizes and can reasonably be reduced to 5:1 (Manly, 2005). According to Mundfrom, Shaw and Ke (2009), the minimum number of participants in a study is estimated at 3 to 20 times the number of variables. The authors added that the acceptable range of sample sizes is from 100 to 1,000. The questionnaire in this study included 63 variables, making a minimum estimated sample size of 198 participants. As this study exceeded 198 participants, it is anticipated that it will produce valid findings (see Sections 4.4.4. and 4.5.2).

Hospitals were randomly selected to participate in this study from a list of hospitals in the Eastern Province of Saudi Arabia. To complement this data collection, a link to the questionnaire was distributed online using a number of social media platforms to ensure reaching a greater sample. Twitter, WhatsApp and LinkedIn platforms were used to reach as many participants as possible, making the sampling technique convenient. Therefore, non-probability convenience sampling was used to recruit the participants for the questionnaire phase. Although this sampling strategy has received great criticism for failing to achieve representation of a population, convenience sampling is a popular technique in social science studies (Gorard, 2021; Gray, 2014). In this technique, participants who are easily reached and accessed are invited to participate in a study. In contrast to random sampling, which means basically randomly selecting participants from a predetermined set of potential participants, convenience sampling is reaching participants when it is impossible to have a list of participants, thus making it difficult to carry out random sampling (Gorard, 2021; Schreier, 2018). This is the reason for using convenience sampling in this study. However, caution was taken to clarify and ensure that the questionnaire should only be filled in by medical employers. The target population was mentioned and stressed in the invitational message accompanying the link to the questionnaire (see Appendix G).

It was somewhat challenging to calculate the response rate for this study as it was impossible to anticipate the exact number of people who had received the link to the questionnaire. Also, the medical director offices at three hospitals had the responsibility of printing out and distributing hard copies of the questionnaire to physicians and managerial staff, but it is

unknown how many hard copies were in fact produced. This is normal with non-probability convenience sampling, where the actual size of the population is unknown (Gorard, 2021).

The sample size for this part of the study was 251 respondents. This response was within the recommended sample size (above 100), making it suitable for generating valid and reliable findings (see Section 4.5.2). A total of 66 responses came from the hard copies of the questionnaire and the rest were from the online questionnaire. The participants were medical employers, i.e., physicians from public and private hospitals in Saudi Arabia, as shown in the quantitative findings chapter (see Table 10 in Section 7.1.2 in Chapter 7).

After successfully completing the data collection stages using interviews and a survey, the data generated were analyzed using appropriate techniques, as detailed next.

4.4.4 Survey quantitative data analysis: exploratory factor analysis

In exploratory design studies, after drawing qualitative themes in the first stage, the quantitative analysis in the second stage tests the appropriateness of those themes (Creswell & Clark, 2017). It is recognized that data need to be collected from a high number of participants in order to guarantee accurate and reliable results (Tymms, 2012). By ensuring a high number of participants, the current research met that requirement. The survey quantitative data was analyzed using SPSS Statistics 26 software. Prior to analyzing the data, a Cronbach's Alpha reliability test was used to study the construct reliability of the questionnaire. As shown in the quantitative findings chapter (see Chapter 8), the questionnaire scales accomplished significantly high reliability values.

With regard to the statistical tools employed to analyze the quantitative data, a decision was made to run an Exploratory Factor Analysis (EFA) test to propose valid factors that define the quality attributes of HE and medical graduates from the perspective of the employers. The quantitative data originating from the questionnaire were grouped into two scales – quality of HE and medical graduate scales – and these were broken down into subscales and, in turn, into variables. A decision was made to run factor analysis on the quantitative data in order to determine the quality constructs of both scales: HE and medical graduates. This test was chosen because it is best suited to answering the research questions. The main purpose of this test is to reduce the number of factors and dimensions included in the questionnaire to a representative and valid set of quality factors. Factor analysis is considered to be a data reduction technique that maintains the best variation in the dataset (Marradi, 1981). It is often

used to extract fewer factors from a set of variables, where similar variables are extracted into the same factors to create a new construct, thereby explaining the relationship more accurately (Widaman, 1993). Factor analysis is used to provide a dataset as specific and concise as possible, making it best suited to answering the research questions (Field, 2018).

The EFA test was run separately for each scale, HE quality and medical graduate quality, as suggested by Awang (2012). Principal axis factor analysis was conducted on the items using oblique rotation with a Kaiser Normalization with eigenvalues above 1. Running EFA on each of the subscales was considered but it was decided instead to run it with all the possible quality variables to extract a new set of factors. The oblique rotation was chosen to allow factors to correlate where possible, unlike orthogonal rotation (varimax), which makes correlation between factors impracticable (Field, 2018). The variables that scored correlations below 0.40 were excluded, as suggested by Hinkin (1995). Additionally, three or more variables are necessary to form a factor, therefore factors that obtained fewer than three variables were excluded from the analysis, in line with Tabachnick and Fidell (2007). The EFA test of the first scale resulted in six valid factors that define quality in HE from the perspective of employers (see Chapter 6). On the other hand, the EFA test of the second scale resulted in three valid factors that define the quality of medical graduates from the perspective of employers.

Prior to running the EFA, a Kaiser-Meyer-Olkin (KMO) measure was undertaken to determine the appropriateness of the data and the sample to fit the factor analysis. The KMO Measure of Sampling Adequacy is an important assumption for factor analysis. Indeed, factor analysis requires a large sample size to avoid errors in reporting data (Yong & Pearce, 2013). This is why it is necessary to use the KMO to measure sampling adequacy before conducting factor analysis. The KMO measure for factor analysis must be greater than 0.50 and near to a value of 1 to be appropriate for factor analysis (Rencher, 2002). A KMO measure of less than 0.50 is considered unacceptable, meaning these items are not appropriate for factor analysis.

Moreover, the anti-image matrix was checked to ensure that all the individual diagonal elements were above the acceptable value of 0.5; items that obtained less than 0.50 were removed to avoid unreliable analysis (Field, 2018). According to Yong and Pearce (2013), failure to measure the suitability of the data hinders the emergence of reliable factors. In addition, Bartlett's test of Sphericity is another way to test the suitability of data for factor

analysis. The test has to be significant (p value < 0.05) to indicate a significant relationship between the variables (Field, 2018).

The reliability and validity of the research findings must be tested afterwards. A number of measures were taken to ensure that the findings of the interviews and survey were valid and reliable (see next) so as to be able to propose a comprehensive quality model.

4.5 Validity and Reliability

The concept of validity in research was first coined by Kelley (1927). According to his definition, validity in research refers to measuring what the instrument intends to measure, i.e., in this case, ensuring that the findings of the interviews and survey were actually the perspectives of the employers about quality in HE and of medical graduates. Reliability tests were used to ensure that the data collection instrument resulted in consistent findings. The concept of reliability is widely used in quantitative methods but it is limited in qualitative methods.

4.5.1 Validity and reliability of qualitative data

Thematic analysis is actually flexible (Braun & Clarke, 2006) and different analysis of a single piece of qualitative data could not generate the same results if done by different researchers. Nonetheless, the issue of inconsistency is not problematic as long as the research questions are effectively answered (Bloomberg & Volpe, 2016). Although reliability tests are limited in qualitative methods (Creswell & Clark, 2017), qualitative data still need to be tested for reliability and validity, as with quantitative data. This means ensuring that themes and codes are generated in relation to the research questions and that they consequently provide meaningful answers to these questions. For the data validation, a peer debriefing approach was adopted whereby the study findings were reviewed by a peer who was an expert in qualitative analysis (Bloomberg & Volpe, 2016; Creswell & Clark, 2017). This was done to ensure that the generated themes and codes were relevant to the study scope and questions. Additionally, another way of ensuring the validity of the generated findings would be to develop a questionnaire for the second phase. The findings of the questionnaire analysis would provide additional validation and confirmation of the qualitative findings.

4.5.2 Validity and reliability of quantitative data

Validity can be measured internally and externally. Internal validity refers to validating a study so that it generates trustworthy findings. External validity is justified if a study's results can be generalized to other situations, populations and times (Cronbach & Meehl, 1955;

Schreier, 2018). Validity for the new set of factors, in both HE quality and medical graduate quality scales, was established through convergent and discriminant validity.

Convergent validity indicates that the variables in a single factor have a high correlation. When undertaking EFA, if the factor loadings of variables in a factor are greater than 0.05, or are on average greater than 0.07, then convergent validity is established. On the other hand, discriminant validity refers to a situation whereby factors are uncorrelated and distinct. In other words, variables within single factors must relate to each other more strongly than they do to variables in other factors. A common and effective way to examine discriminant validity in EFA is to observe cross-loadings of variables where they fall under more than one factor. However, any cross-loadings must not exceed 0.2. Discriminant validity can also be established by examining the correlation matrix. Usually, a value greater than 0.70 indicates a high correlation among the factors (Field, 2018).

With regard to the reliability of the extracted factors, a reliability analysis of the new sets of factors was conducted afterwards by running Cronbach's Alpha tests for both sets of factors: 1) factors pertaining to quality in HE; and 2) factors pertaining to quality of medical graduates (see Chapter 8).

4.6 Ethical Considerations

Ethical measures were taken into consideration to ensure the conduct of a well-designed ethical research study. These measures were taken in the two stages of the data collection. Ethical approval (Number 3147) for the study was granted by Durham University (see Appendix I). A single ethical approval from Durham University was sufficient for this study to cover the two data collection stages. In addition, the study was granted ethical approval by Imam Abdulrahman Bin Faisal University for both data collection stages (see Appendix I). The university provided a letter addressed to a number of hospitals in Saudi Arabia encouraging them to participate in this study. In addition, approval from participating hospitals was obtained to participate in the interviews and survey. The participants were not asked to disclose any sensitive information about the running of the hospital or any content about training programs, but rather to express their views on what constitutes a good-quality medical education and what attributes a good-quality graduate should possess. A number of hospitals refused to take part in this study or disclose information due to the sensitive nature of information and data privacy.

The confidentiality of the gathered data and responses in the interviews and questionnaires was guaranteed. The recordings, along with the transcribed pieces and questionnaire responses, remained confidential and were secured in a password-protected personal computer until the end of the research. Because the survey was conducted online using Smartsurvey.co.uk, the responses are stored in the Smartsurvey.co.uk database. However, the website guarantees full security of all data. According to Smartsurvey.co.uk, data gathered from surveys are SSL encrypted. I, as a researcher, was granted password protection and IP restriction to my account to view the responses. The website is certified for adopting high data security standards, it also adheres to EU Privacy Laws and is registered under the Data Protection Act. After the PhD degree is awarded, the data from the two research stages will be destroyed to protect the confidentiality of the content.

Additionally, the anonymity of the participants was guaranteed while the quantitative and qualitative data were analyzed. For the purposes of anonymity in reports of qualitative findings, pseudonyms were used for the participants' names. A decision was made to name the participants, rather than number them, to easily show and present the different perspectives of different participants without causing any confusion. Similarly, to ensure anonymity in the questionnaire, no identifiable information was attached to the data reported. Indeed, care was taken to promise that even the researcher would not be able to recognize the participants while working on the data.

The interviewees' consent was obtained in writing at the beginning of each interview. The main purpose of this was to ensure that the participants knew exactly what the purpose of the interview and the research was, and that they could fully agree to it before cooperating. This ultimately created a comfortable atmosphere for the interviewees to express their views in (Hammersley & Traianou, 2012). Indeed, it is ethically unacceptable to proceed with an interview before providing a full explanation of the study to the interviewees and obtaining their signatures on the consent form (Bell & Waters, 2014). In addition to the consent form, a participant information sheet was prepared, as part of the ethical requirements, stating in brief the background and purpose of the research as well as the use of the information being gathered. This sheet was sent to all the participants beforehand so that they could understand why they were being interviewed and to allow them to ask any questions, if they had any, before the interview commenced. The participants did not sign the consent form until they were fully aware of the research purpose. They were told that they had the right to withdraw

from the study at any point and were free to refuse to answer any questions. Copies of the consent form and the participant sheet are attached in Appendix J.

With regard to the questionnaires, it was challenging to obtain the consent of every participant before the survey. However, a brief summary of the purpose of the study, along with confidentiality and anonymity information, was provided at the beginning of the questionnaire. This information was a summary of the consent form and participant information sheet given to the interview participants. Indeed, the participants were asked to tick a number of boxes indicating their consent to take part in the study. Therefore, the completion of the questionnaire was presumed to indicate consent to take part in the survey.

4.7 Methodological Limitations

As with any research study across various disciplines, a number of methodological limitations became clear during the conduct of this study, especially during the data collection process. In general, the choice of the medical field led to some problems. There is little distinction between faculty members' and employers' roles in the field of medicine. As the majority of faculty members were already employers at either teaching hospitals or public or private hospitals, the decision to choose medical colleges was based on the response of the college to my request. In addition, I assumed that medical departments in hospitals were probably higher than other supportive and administrative departments. I also assumed that choosing medicine would help me to recruit a higher number of participants for the data collection. However, I targeted medical and medical-related colleges because of my background in health management.

Overall, the methodological limitations in this study were encountered in the stages of participant recruitment, interview data collection, and survey data collection, as discussed in this section.

4.7.1 Participant recruitment

In order to recruit participants, a number of official letters were needed to invite and encourage hospitals to take part in the study. The process of obtaining letters from Imam Abdulrahman Bin Faisal University and sending them to hospitals to invite them to participate in the study consumed a lot of time from the actual time allotted for data collection. Taking into account the restrictions of the Saudi Cultural Bureau, as a sponsor, I had three months to collect the data. If I had the chance to repeat the experience of

interviewing the participants, I would start with the process of obtaining official letters before arriving in Saudi Arabia.

Due to the sensitive nature of hospitals and their cautiousness in disclosing information for the sake of academic research, obtaining approval to conduct the semi-structured interviews and the survey was problematic. Although copies of the interview schedule and questionnaire were presented beforehand to the hospitals' management teams, the managers were reluctant to approve such data collection. Two hospitals refused to take part in the interview stage and two hospitals refused to participate in the survey. Additionally, some physicians in the participating hospitals refused to take part in the interviews. Nonetheless, the number of participants for both stages was acceptable.

4.7.2 Interview data collection

Researcher positionality influence is mainly presented in qualitative studies, and it could be categorized in three different ways: the researcher's personal position, which may influence what is researched; how participants view the researcher; and the influence of the research context on what is researched (Savin-Baden & Major, 2013). My personal position working on accreditation process has influenced the purpose of this research. The scope is to widen our understanding of quality beyond the perspective of academics and accreditation agencies and incorporate the perspective of employers.

Moreover, how participants view the researcher could be influenced by the gender, age, nationality, and socio-economic class of both the researcher and the participants (Savin-Baden & Major, 2013). For instance, the researcher's age could be a barrier to participants. If the researcher is young, they may not be taken seriously when conducting the interviews. Gender differences between the researcher and participants could also be an obstacle for discussing and obtaining information openly and freely. For example, women might not feel free to talk about women-related and sensitive topics with a male researcher. In this study, however, the topic being researched is not believed to be sensitive, due to the factors discussed above. The participants in this study were asked how they conceptualize quality in medical education and what the attributes of a high quality medical graduate are. That being said, one hospital did refuse to take part in the study, since management there was not comfortable with physicians disclosing information about quality matters, both because I pursued my studies abroad and because the results will likely be published. However, the majority of participants showed support and encouragement and my age and gender are not

believed to have influenced the views of participants. In fact, some of the participants even offered collaboration in further research.

With regard to nationality, since the study was conducted in Saudi Arabia, my Saudi nationality had a positive influence in terms of participants accepting to take part in the study and talking openly about quality in medical education in Saudi Arabia. Moreover, my background in quality management and medical education encouraged participants to talk openly about quality in medical education, its issues and the needs for reforms. The participants realized that I understood what quality and medical education are and I appreciated what their needs are. Ensuring that the participants knew my personal background and position, facilitated a fruitful discussion about quality in medical education and graduates.

During the interviews, a few yes/no questions were raised unintentionally. Listening to the audio recordings of the interviews, which was at the end of the data collection, I noticed that I had turned a few questions into yes/no questions, something that, in turn, might have either influenced the participants' responses or limited their answers to certain points. In retrospect, I see that I should have listened to the audio recordings while collecting the data as I would then have been able to correct myself and avoid doing the same in the other interviews. This might have played a role in creating bias in the participants' responses. To overcome these situations, for some points during interviews, some questions were rephrased and asked twice just to make sure of the interviewees' point of view.

The point that some physicians may also be faculty members at a university was missed when setting the selection criteria for the interview participants. If this had been added to the criteria, better and more accurate responses would have been obtained. In the design stage of this study, there was an intention to exclude university hospitals to avoid interviewing faculty members. However, one of the interviewees who worked at a private hospital was also a faculty member at a medical school in Saudi Arabia. It was a mistake to interview this person although his inputs were valuable and included in the analysis. Moreover, sometimes the role of the participants switched from employer to parent. This can be clearly observed in the responses when the interviewees started to focus on university for the sake of their children rather than as a potential employment seeker in the medical labor market.

These are minor limitations encountered in the interview phase, but they were under control and eventually overcome to produce reliable and valid interview findings.

4.7.3 Questionnaire design and data collection

Other methodological limitations occurred while designing and collecting the data in the survey stage. When designing the questionnaire, an item to allow participants to rate the importance of soft skills acquisition by medical graduates was not included. Unfortunately, soft skills as a quality attribute were dismissed. Instead, the questionnaire included a multiple-choice question asking participants to select the seven most favored soft skills for the medical labor market. To overcome this issue, the discussion of the findings focuses on the inputs obtained from interviews along with the discussion of the multiple-choice question, as shown in the discussion chapter (see Chapter 8). Additionally, another item to rate the importance of the involvement of employers in medical education was not included in the questionnaire. Similar to the previous item issue, the discussion in Chapter 8 focuses on the multiple-choice responses on employers' preferences for their involvement in HE, assuming that employers acknowledge their involvement in medical education as a quality attribute, as found in the qualitative findings (see Chapter 5).

Another limitation is that, in the questionnaire used in this study, a key aspect of formulating effective questionnaire items was overlooked. Adjectives were added to some items to provide additional descriptions of the quality attributes, such as the words “effective”, “clear”, and “well-structured” (see Appendix E). However, these words could mislead the participants in their interpretation when rating the importance of attributes to describe quality in medical education and graduates. According to Siedlecki (2019), questionnaire items need to be clear, precise, short, and unbiased. The author also adds that an item should be clear and measure a single attribute, therefore the word “and” should be avoided so as not to confuse participants, as seen in some items in the questionnaire (see Appendix E). The wording of items is key in developing an effective questionnaire to ensure participants interpret the item correctly and the researcher obtains valid and precise responses. Thus, future research should avoid adjectives that may be misleading when wording questionnaire items.

Some limitations in the design of the questionnaire were related to SmartSurvey.co.uk, the website used to build the questionnaire. Initially, when developing the questionnaire, I had three research questions. The third research question aimed to measure the extent to which the perspectives of employers and university quality staff varied. Therefore, the questionnaire was intended to be used with employers and university staff. However, due to the limited availability of time, the final research question was excluded after administering the questionnaire. The intention was to add a “Not Applicable” option for faculty members, who

are responsible for quality assurance activities, when answering the questionnaire. As faculty members of quality assurance at universities are not experts or knowledgeable about medical issues, “Not Applicable” was added to the questionnaire, particularly in the parts pertaining to medical education and pedagogy. However, it was a mistake to put “Not Applicable” as an option on the Likert scale as it might have caused some confusion to employers when filling in the questionnaire. This mistake was a result of the limitations on the website used to build the questionnaire. This website does not have a feature to switch between questionnaire versions for different groups of participants. Luckily, none of the employers used the “Not Applicable” option in the questionnaire.

Additionally, another issue arising from the use of the SmartSurvey.co.uk website was producing two versions of the questionnaire – one in English and one in Arabic. This was due to the limitation of the website, which did not allow switching between different languages. Therefore, two different links were established, one for each questionnaire version. The participants were able to choose the language they preferred to answer the questionnaire in. Efforts were made to make the versions identical in terms of item numbers, wording and order. However, after survey completion, some variation was detected between the two versions. The English language version had more items than the Arabic version. As the Arabic version had more participant responses than the English version, a decision was made to cut some items from the English version questionnaire. Efforts were made to make the two versions identical prior to analyzing the data.

The disadvantage of using an online survey encountered in this study was the impossibility of controlling the participants, and so the survey was made open to all without restriction. In this survey, two irrelevant participants took part. One was a CEO at a bank and the other was an officer at a training and internship department. These two participants were excluded from the study to ensure the validity of the questionnaire results.

On the other hand, some limitations were encountered in the data collection using the hard copy questionnaire. The drawback of having a hard copy questionnaire was that some questionnaires were not answered thoroughly. Three incomplete questionnaire responses were excluded from the study. In addition, the majority of hard copy questionnaires came back missing some demographic data pertaining to nationality and previous experience abroad. Indeed, the question about previous experience abroad was misunderstood. The participants were supposed to select a country of experience from a drop down list on the

online questionnaire. However, in the hard copy questionnaire some of them entered the number of years while others entered the name of the hospital where they worked. Moreover, although the nationality question was mandatory in the online-based questionnaire, the majority of paper-based questionnaires participants preferred not to disclose this. Hence, I decided to put the missing nationality as ‘The Bahamas’ – the Bahamas therefore indicates an unknown nationality.

These methodological limitations were manageable and did not hinder the effective progress of the study. Although they did impact the plan and time frame of the study, the study resulted in valid and reliable findings, as shown in the findings chapters (see Chapters 6, 7 and 8).

4.8 Chapter Summary

In summary, this chapter has elaborated on the methodological approach adopted in this study. In order to answer the research questions and achieve the study’s aims, an exploratory mixed-methods approach was employed, guided by a pragmatic research paradigm. The research was carried out in two stages: semi-structured interviews, followed by a survey. The target population of the study was medical employers at both public and private hospitals across Saudi Arabia. It is expected that a comprehensive model for quality in medical education in Saudi Arabia from the perspective of employers will emerge from the study.

In the interview stage, purposive sampling was used, i.e., participants were purposefully selected to provide rich and valuable information (Schreier, 2018). According to the sampling criterion, the aim was to interview medical department heads from a variety of medical specialties. A total of 14 medical employers from two private and three public hospitals participated. Deductive thematic analysis was adopted to analyze the qualitative data gained from the interviews using Nvivo 12 software to ease the coding process.

In the survey stage, a questionnaire was developed in accordance with the findings of the interview stage. SmartSurvey.co.uk was used to design an online questionnaire through a link sent to medical employers. A total of 17 hospitals – nine public and eight private – across Saudi Arabia participated in this stage. Moreover, additional platforms were used to distribute the questionnaire: Twitter, LinkedIn and WhatsApp. These platforms helped to increase the sample size of the survey. Hard copies of the questionnaire were also used at the request of three hospitals. The sample size of the survey was 251 participants. EFA was used

to analyze the quantitative data. The findings of the two data collection stages were tested for reliability and validity.

Ethical matters were taken into consideration to ensure the ethical conduct of the study. This study, like any other, encountered a number of methodological limitations; however, these did not impact the validity and reliability of the findings. The next two chapters will demonstrate the findings resulting from the thematic analysis of the interview data and the quantitative findings emerging from statistically analyzing the survey data.

CHAPTER 5 INTERVIEW FINDINGS 1: QUALITY OF MEDICAL EDUCATION

5.0 Introduction

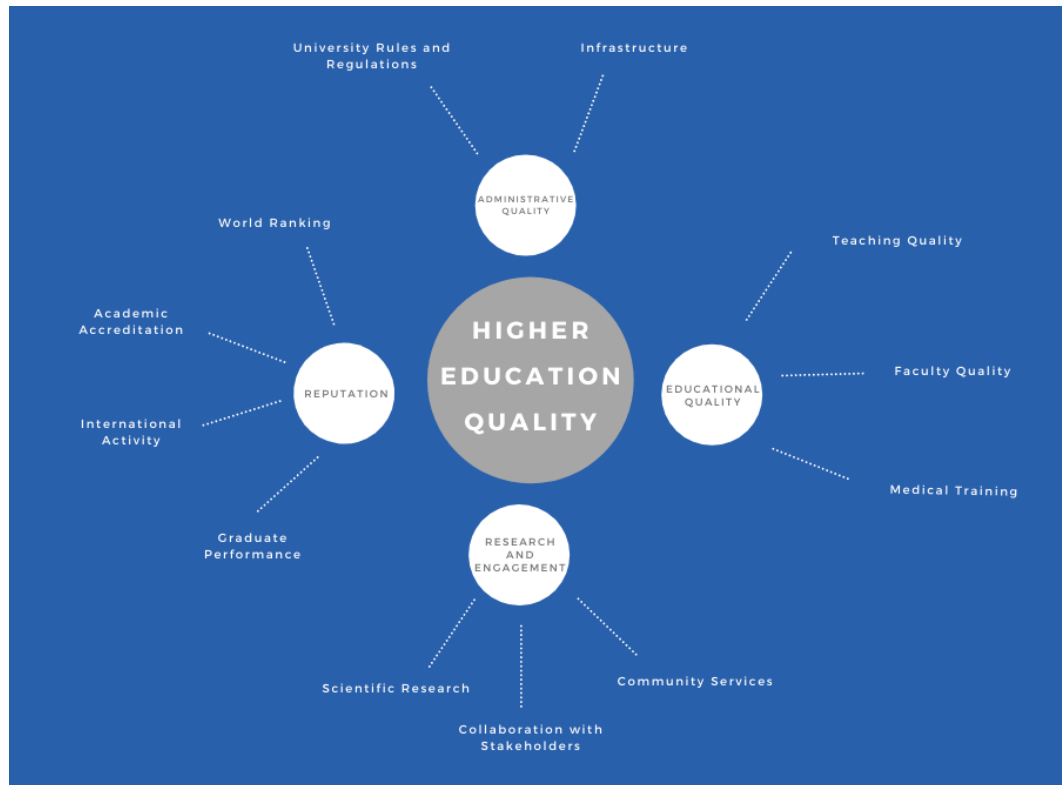
The data collection for this study was undertaken in two phases to develop a comprehensive quality model in HE from the perspective of medical employers. In the first phase, data were collected using semi-structured interviews with employers in public and private hospitals in Saudi Arabia. The purpose of these interviews was to capture their perspective about the quality attributes of HE and medical graduates. This chapter is designed to report the qualitative data findings that emerged from the interviews. The interviews started with questions about the quality of HE and then about the quality of medical graduates, as seen in the interview schedule in Appendix C. Due to the high volume of information obtained from these interviews, the findings are divided into two chapters. This chapter discusses the participants' conceptualization of quality in HE and thus answers the first research question, and the next chapter discusses the quality of medical graduates.

In Saudi Arabia, the NCAAA governs the quality of HEIs. The NCAAA categorizes quality in HE according to eight standards: 1) Mission, Goals and Strategic Planning; 2) Governance, Leadership and Management; 3) Teaching and Learning; 4) Students; 5) Faculty and Staff; 6) Institutional Resources; 7) Scientific Research and Innovation; and 8) Community Partnership (NCAAA, 2018). Universities that demonstrate compliance with these standards earn an accreditation indicating high quality. While the NCAAA's quality standards are clear to university administration, these standards are not clear to employers, making it interesting to explore and review their views about these standards against what is actually done in universities to achieve quality. Beside these quality standards, employers' perspectives of the quality of HE in Saudi Arabia in general have not yet been studied.

To bridge this gap in the literature, 14 employers from five private and public hospitals in the Eastern Region of Saudi Arabia were interviewed. The interviews were semi-structured and an interview schedule was used to guide the conversations. Abductive thematic analysis was adopted to analyze the data. The analysis therefore was influenced by the NCAAA's quality standards and literature. NVivo software was utilized for coding and generating the themes. Following a continuous cycle of data analysis, the datasets were ultimately narrowed down to four themes, 12 categories and 12 codes, as shown in Figure 2.

Figure 2

Employers' Perspectives of the Quality Attributes of Higher Education: Themes, Categories



Analysis of the interview data reveals that employers' perspectives of quality in HE can be grouped into four themes: 1) Administrative Quality; 2) Educational Quality; 3) Scientific Research and Engagement Culture; and 4) University Reputation. Each of these themes, categories and codes from the interview data is discussed in more detail in Sections 6.2, 6.3, 6.4 and 6.5. According to Bloomberg and Volpe (2016), qualitative results are presented in a descriptive manner using clues, along with the participants' quotes from the interviews.

5.1 Theme 1: University Administrative Quality

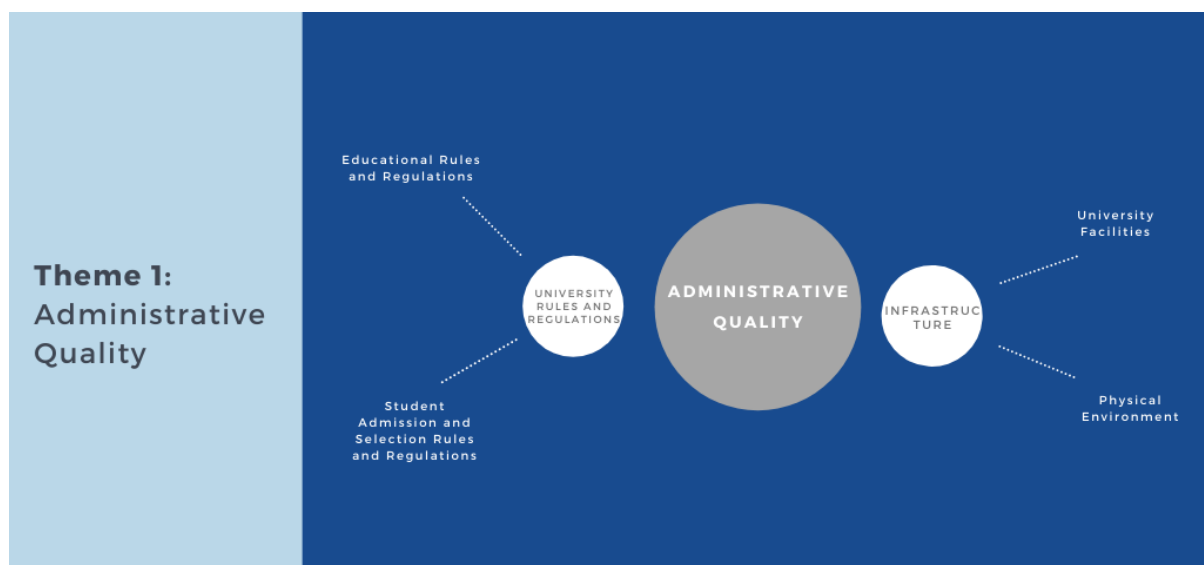
The first theme to emerge from the data was related to the importance of aspects of university administration as a quality attribute in HE. The NCAAA (2018) lists a number of quality standards for university administration, as discussed in the introduction chapter (see Chapter 1). Under this theme, employers' opinions about the importance of the quality attributes pertaining to university administration are discussed.

Indeed, employers praise the role of the university administration to ensure the smooth operation of universities (AlAmri, Mathew, Zubairi, & Jani, 2020). Rodman et al. (2013),

show that employers are less concerned about the financial resources of universities when considering quality. Indeed, in this study, when the employers were asked about the quality attributes of the university, none mentioned finance-related matters. They did, however, emphasize other attributes, which are grouped into two main categories: infrastructure, and university rules and regulations. These two categories break down into four codes, as shown in Figure 3. Like the NCAAA quality standards, employers assert that university administration quality attributes include ensuring that the university's infrastructure is well equipped in terms of facilities, buildings and technology, which is incorporated to aid the teaching and learning experience. In addition, the employers assert that in order for universities to achieve quality, they should be held responsible for developing and maintaining rules and regulations pertaining to student assessment, admission and selection.

Figure 3

Administrative Quality Theme, Categories and Codes



5.1.1 Infrastructure

The employers in this study believe that universities are accountable for creating a healthy environment for staff to be able to work efficiently and for students to learn. A healthy university environment is a quality matter from the perspective of employers. The World Bank has reported three factors that underline successful universities: talented faculty members and students, well-equipped facilities to ensure the best learning and research experience, and governance (Kutbi & Hashim, 2017). Similarly, employers think that high-

quality universities have outstanding environments and, as shown in this category, this includes two codes; physical environment and facilities.

5.1.1.1 Physical environment

Universities are expected to create a healthy working and learning environment for staff, faculty members and students. According to three employers, an appropriate environment is likely to enhance the productivity of work and studies. The quality of universities is reflected in the overall environment, from the perspectives of both working and learning, as claimed by Dr. Yousef and Dr. Reem:

I evaluate universities based on the learning atmosphere
[and] work environment. **Dr. Yousef**

[Universities that] offer students healthy educational
atmosphere. **Dr. Reem**

Dr. Bayan had a chance to visit her daughter who is studying at a well-known university in the USA. She was impressed with the educational system in the USA and during the interview, she kept comparing American universities with Saudi universities. From her point of view, the university's landscape and facilities give an indication of its quality.

Universities [abroad] are very different, even the buildings
and the natural environment itself. There are trees and rivers
on the campus ... Therefore, the people, the surroundings,
and the facilities of a university make a difference. **Dr.
Bayan**

Dr. Adam, in contrast, believes that buildings are not an indication of quality. Universities could devote a huge budget to luxury buildings, but this might detract attention from teaching and learning experiences. Indeed, the physical condition of buildings was the attribute that attracted least interest from employers in determining the quality of a university (Ilies, Osoian and Zaharie, 2010).

Appearances do not matter ... Just as we evaluate hospitals,
one hospital might have a grand building that lacks good
doctors, and vice versa. Therefore, everything must be
perfect, not only the buildings. **Dr. Adam**

Generally speaking, university administration/management dedicate their efforts to ensuring that university buildings and campuses are well designed. Prestigious buildings, including facilities and landscape, could contribute to creating a healthy working/learning environment for staff and students. Some employers agree that creating a healthy environment for students and staff is a quality attribute in HE. A study at King Fahd University of Petroleum and Minerals showed that the physical environment, classroom and buildings lead to higher levels of student satisfaction (Sohail & Shaikh, 2004). However, although students base their perception of quality on the appearance of university buildings, according to Teeroovengadum et al. (2015), one employer believes that high-quality universities are not necessarily synonymous with modern buildings, rather that quality is all about facilities and the learning environment.

5.1.1.2 University facilities

According to the NCAAA quality standards, facilities and equipment should be effectively developed and managed by universities in Saudi Arabia. Similarly, the majority of employers assess a university's quality, especially for medical education, by the presence of suitable classrooms, facilities and equipment. Dr. Adam argues that the availability of laboratories and equipment is one of the indicators that underpin a university's quality.

I believe that this [quality] matter has to do with the resources and capabilities of universities ... I mean ... equipment, like for plastic surgery and delicate surgery ... What matters the most is the students, teaching staff, and facilities like laboratories. **Dr. Adam**

However, according to Dr. Bayan, in contrast to international universities, laboratories in Saudi Arabian universities tend to be limited in terms of resources and material. She asserts that an advanced laboratory is an indicator of universities' quality. Deficiencies in laboratories could obstruct students' acquisition of practical skills. Medical students need to be exposed to highly effective and up-to-date equipment in order to stay abreast of advances in medicine.

Laboratories and materials [in our universities] are not quite the ones needed ... [Students] do not experience what they have been studying practically. Developing facilities and laboratories is very important. **Dr. Bayan**

In spite of the significance of university facilities and equipment, Dr. Mazin asserts that incorporating technology into these facilities is linked to quality in HE. He thinks that classrooms should be built to effectively launch e-learning and distance learning opportunities for faculty members and students.

Classrooms should be equipped with technology to reach professors and lecturers worldwide. **Dr. Mazin**

The library is another facility that enhances the study experience. The existence of a proper university library, or maybe multiple libraries, is a matter of university quality according to Dr. Hakim. Similarly, the NCAAA quality standards have a set of predetermined quality practices dedicated to ensuring an equipped library with an effective service delivery in place.

When the university itself is not fully equipped, speaking of libraries for example, as a place for learning and developing skills, that would hinder students from improving their skills. **Dr. Hakim**

Dr. Hakim adds that student accommodation is also quite important for the learning experience. He believes that providing adequate and proper accommodation facilitates students' studying and learning experiences.

Comfortable residence ... Because when a student stays in a residence with three or four other students, it would be harder to focus properly on studying and everything related.

Dr. Hakim

According to Teeroovengadum et al. (2015), the quality of the physical environment is one dimension of quality in HE from the perspective of students. The study concluded that students seek adequate infrastructure and learning settings. In other words, students take note of and value the quality of the environment, such as the availability of cafeterias, libraries, recreational centers, classrooms, etc. The perspective of employers is quite similar. They associate quality of the infrastructure with a healthy environment and the availability of facilities such as adequate libraries, student accommodation and classrooms.

5.1.2 University Rules and Regulations

In line with standard 1 of the NCAAA quality standards, university administrations are required to establish rules and systems for every aspect of university life to indicate quality. The NCAAA standards encourage having “policies for academic, research, administrative, financial, rights and duties, quality, and community partnerships” (NCAAA, 2018).

Employers in this study stressed the availability of rules and regulations as a quality attribute of universities and they elaborated specifically on the significance of academic rules and regulations. They particularly emphasized the effectiveness of assessment and students’ admission and selection regulations. This category therefore breaks down into two codes, educational regulations, and student admission and selection regulations.

5.1.2.1 Educational rules and regulations

In general, every institution has rules and regulations for specific matters. Three out of 14 employers mentioned university regulations as an indicator of university quality. These three employers emphasized regulations pertaining to students only. Dr. Yousef asserts that students’ assessment and curriculum design should be regulated by the university administration. Indeed, these kinds of regulations are determined and required to be clearly devised and made clear to students by the NCAAA. Dr. Yousef stresses that clear rules and regulations pertaining to student assessment are needed to achieve high quality in HE. Whitehead et al. (2015) point out that the assessment of medical students, especially their psychomotor skills, is quite problematic. According to them, it is crucial to have different channels and ways of assessing medical students in order to produce a high-quality graduate based on what society and the labor market want.

The availability of systems/rules that manage the performance of the university [is an indicator of quality] in terms of assessment techniques used, bylaws related to pass/fail standards, enhancement taken, and development of curriculum in alignment with the needs of society. **Dr.**

Yousef

Well-designed and established rules and regulations for students’ assessment are indeed a quality indicator in HE. Dr. Mazin asserts that having ill-defined student assessment regulations could harm the reputation of the university, specifically in a situation when medical students graduate with high grades but poor performance and then enter the labor market. Hence, student assessment methods should be firmly structured to assess the

students' actual performance rather than constructing assessment methods to help students obtain better grades.

Some universities tend to help students pass their exams or design very easy exams so students get high marks. Unfortunately, this harms the reputation of the university.

Dr. Mazin

Dr. Bayan adds that universities should collaborate with the Saudi Commission for Health Specialties (SCFHS) to set regulations for students' medical training. This is a way to standardize and enhance the the quality of training. The training regulations cover the training site, trainer qualifications, trainee assessment and all aspects related to training. Indeed, this is already mandated by the NCAAA quality standards and normally practiced in Saudi Arabia.

That is why the universities, along with the Saudi Commission, are trying to set rules and regulations [for medical training] to make matters better. **Dr. Bayan**

In summary, from the perspective of three employers, for universities to demonstrate high quality, actions need to take place to set out clear and well-designed rules and regulations for students' assessment and medical training.

5.1.2.2 Student admission and selection rules and regulations

With regard to university rules and regulations, a large number of employers emphasized admission and selection regulations as a quality attribute of universities. In Saudi Arabia, admission to the health sector track in universities is subject to the attainment of three cumulative indicators, namely, high school grades, a national aptitude test and a summative admission test on sciences that is administered by the university to which the students are applying (Telmesani et al., 2011). Employers assert that robust student admission and selection rules and regulations emphasize the quality of universities. Dr. Hasan evaluates the quality of universities by the quality of the students admitted. This implies that the better the admission and selection criteria, the higher the quality that a university can achieve. Dr. Mazin defines a high-quality university as one that sets strong student admission rules and regulations.

This is the most important thing ... the quality of people who are going there. **Dr. Hasan**

They got high standards in selecting student I mean in terms of admission. **Dr. Mazin**

As medicine is a critical discipline, Dr. Sami and Dr. Bayan believe that a high-quality university would have well-designed rules and regulations to regulate student admission and selection procedures. They assert that for a university to indicate quality, it should assess new students on their fitness for entering the medical field prior to their admission. Generally speaking, the medical field is quite different from other fields and it is not suitable to all students. They believe that students' personality is as important as their competency. Therefore, Dr. Bayan suggests minimizing the focus on grades and tests and Dr. Sami suggests incorporating interviews as a key requirement for admission to medical school. Some universities in Saudi Arabia already incorporate interviews into the admission procedure (Telmesani et al., 2011).

Universities must choose their students wisely at first ... this [grades] is what decides if he/she can enter this university or not. However, grades are not everything. Personal traits must be evaluated just as grades are evaluated. **Dr. Bayan**

There should be interviews taken before accepting students. Some students just do not suit the medical sector in terms of their personality. ... Some students are excellent, but they cannot be a physician. **Dr. Sami**

One aspect of administrative quality from the perspective of students is transparency of procedures and regulations in general (Teeroovengadam et al., 2015); the employers here particularly stress the regulations related to student assessments and admission. This might be because employers' perception of quality in HE is narrow and linked to graduates. It could be seen that employers' evaluation of universities' quality is related to the university's ability to serve the students and prepare employable graduates, as no employer considered any other type of regulations to be a quality indicator.

Generally speaking, in comparison with the NCAAA administrative quality standards, employers' perspective on the administrative quality attributes is quite narrow. It is evident that employers have different, more specific priorities, and they focus most on the graduates and how to shape competent graduates for the labor market. They are not as familiar with the

day-to-day functioning of a university as the NCAAA is, which will affect their perspective. According to Monica, Codruta and Adrian (2011), employers are concerned less about general administrative services when conceptualizing quality in HE. In this study, employers are most concerned about facilities and equipment, and regulations as attributes of quality of university administration. These are linked to NCAAA quality standard 2, Governance, Leadership and Management, and part of standard 6, Institutional Resources. It should also be noted that none of the employers mentioned financial matters or the mission and goals of HE institutions, as in the NCAAA quality standard 1, Mission, Goals and Strategic Planning, and part of standard 6, Financial Resources and Budget.

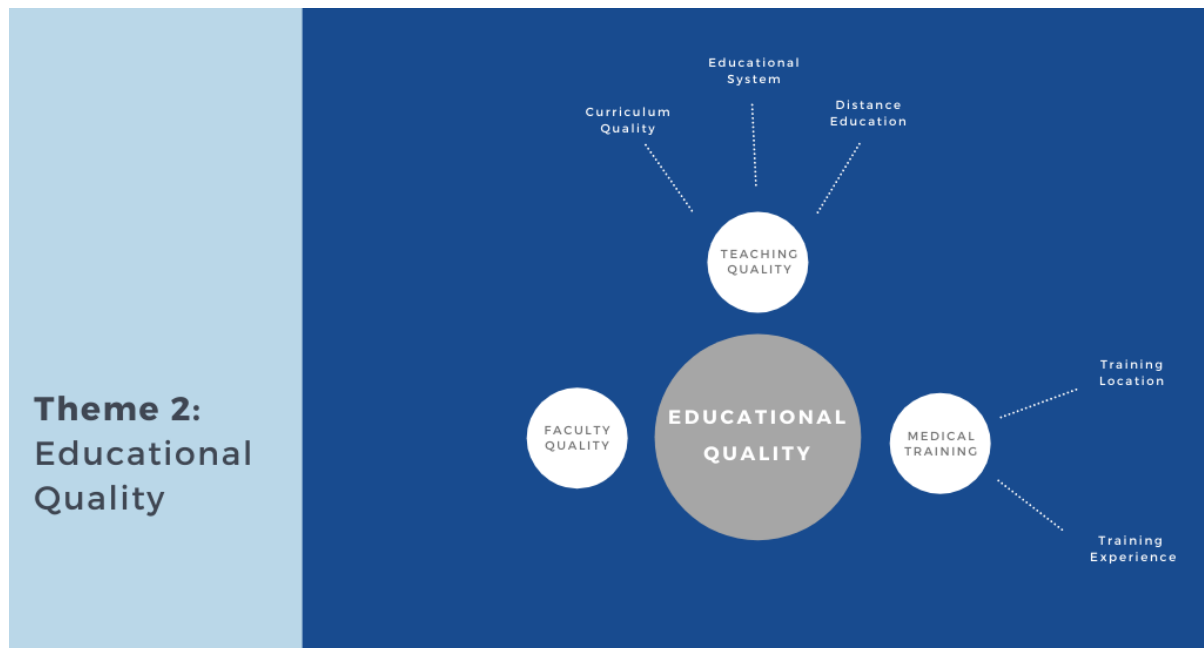
Employers see high-quality universities as those that maintain a healthy environment for students, staff and faculty members. Additionally, universities should be equipped with an appropriate infrastructure, learning facilities, and equipment for medical education to achieve quality. The availability of effective equipment and resources facilitates students' learning and ensures the optimal mastery of hard and soft skills. Moreover, in order for universities to demonstrate a high quality status, they must build and maintain rigid regulations and rules particularly in student assessment, admission and selection. In their opinion, students' personalities should be assessed and interviews should be part of the admission procedure. In fact, this approach is taken at many, but not all, medical colleges across Saudi Arabia. However, this may indicate that the employers are still encountering medical graduates whose personalities or skills do not fit the discipline of medicine.

5.2 Theme 2: Educational Quality

The educational quality theme covers the perceptions of employers regarding the academic aspect of university quality, including teaching, assessment and medical training quality. This theme explores employers' understanding of educational quality and what employers expect from universities in this regard. Employers' perception of educational quality attributes is grouped into three categories: teaching quality, faculty member quality, and medical training. These three categories break down into five codes, as shown in Figure 4.

Figure 4

Educational Quality Theme, Categories, and Codes



Generally speaking, faculty members are considered one of the key factors of quality in HE (Russell Group, 2012). Universities are held accountable for ensuring that faculty members perform in line with high quality standards. The employers claim that teaching quality is linked to the quality of the curriculum and faculty members.

Moreover, according to Gallagher et al. (2015), employers should play a role in teaching in order to narrow the gap between HE and the labor market. Similarly, the employers emphasized the importance of taking part in student training. This practice would enrich the quality of teaching offered to medical students. More quality attributes pertaining to teaching, faculty members and training, from the perspective of the employers, are discussed in this theme.

5.2.1 Teaching quality

The quality of teaching is rated one of the most powerful aspects of high-quality universities by employers (Zaharie, Osoian, & Gavrea, 2013; Ilies et al., 2010). Indeed, the quality of teaching has been blamed for the weakness of GCC country graduates in terms of competency and skills attainment. Hence, improving teaching delivery is essential in order to achieve high-quality HE. Similarly, employers in this study defined the quality of HE as the

quality of the teaching and assessment that students receive. This category thus breaks down into three codes; educational system, assessment quality, and distance education. In Saudi Arabia, medical education is governed by the NCAAA and the SCFHS. They work together to define effective medical teaching and assessment all the way to medical training.

5.2.1.1 Educational system

Originally, traditional teaching took place in medical colleges, which negatively affected the outcome of medical graduates as it resulted in medical graduates having practical skills deficiencies (Telmesani et al., 2011). This situation was heavily criticized for harming students (Telmesani et al., 2011) and probably played a key role in releasing poor students into the community. As a result, the medical educational system in Saudi Arabia has been turned around and shifted to a more innovative style of teaching (Telmesani et al., 2011). Currently, competency-based medical education is predominantly used for teaching the health profession in Saudi Arabia (Zaini et al., 2011). In the interviews, three employers discussed the structure of the medical educational system in Saudi Arabia. They believe that a well-structured educational system is a key indicator of quality in HE.

According to Dr. Rayan, a horizontal educational system defines the quality of teaching in medical colleges. In horizontal education, theory and practice are integrated in the early years of medical studies. In other words, students are exposed to practical experience along with theory from the first year of their studies. In horizontal systems, students have the chance to visit hospitals to observe patients while studying the theory. However, Dr. Rayan is a doctor from Egypt who might not be fully involved in and aware of the situation in Saudi Arabian universities. He is not familiar with the competency-based system, adopted in medical colleges in Saudi Arabia, where practical skills receive significant emphasis; this system serves a similar purpose to horizontal systems. Nonetheless, he asserts and reinforces those horizontal systems are more effective than traditional educational systems.

In the traditional educational system of medicine the first, second and third years are theoretical and the fourth, fifth and sixth years are practical. ... Some universities adopt horizontal teaching whereby students study physiology and internal medicine together in the first year and anatomy as well ... universities teach students theory and practice together and from the first year, [students] observe patients

and examine them. I believe it is a great technique to be adopted in all universities with collaboration with all hospitals. **Dr. Rayan**

Dr. Adel, a Saudi doctor, agrees that the horizontal educational system is a quality attribute in HE. In this educational system, medical students in Saudi universities are exposed to theory and practice from the start of medical school. As he sees it, students study medicine in accordance with specific organs, in both theory and practice.

We used to study each branch as a specialty on its own. Physiology, pathology, and microbiology, each one on its own. Now they are taught as per the organ concerned. If they were examining lungs, then they learn everything about the lungs. **Dr. Adel**

Dr. Adam, who works at a private hospital, elaborated on the successful experience of involving students in practice at the earliest stage. Students who visited the hospital in their early stage of medicine studies had benefited from this experience in terms of practicing theory on real patients, as also seen in section 2.4.

That way we [employers and universities] were able to evaluate them [students] theoretically and practically at the same time. **Dr. Adam**

Indeed, one study showed that students' involvement with residents in clinical training is mutually beneficial (Hoellein et al., 2007). They believe that students enjoy and benefit from being involved in early clinical training, and likewise residents believe that involving students in clinical training makes trainers discuss basic medical knowledge which, in turn, helps residents to structure a holistic knowledge. These kinds of discussion are fruitful for residents in terms of revising and recalling basic knowledge. This point reinforces the quality attribute of involving students in clinical training at the earliest stages, from the employers' perspective, later in this theme (see section 2.4).

5.2.1.2 Distance education

In the context of rapid technological change, three employers in this study see distance education as an indicator of educational quality, as a replacement for traditional teaching techniques. Employers emphasized the need to implement technological techniques,

specifically in teaching. This aligns with employers' views on the significance of technological infrastructure for medical education, discussed in theme 1. Dr. Rayan sees that technological advances in medical education are very promising. Adopting e-learning programs in university could be fruitful for the student learning experience, according to Dr. Hakim. Therefore, distance education is perceived as a quality indicator in HE from the perspective of employers.

Distance education and robotic surgery, endoscopy, minimal access surgery is very open opportunity and would eliminate the traditional surgeries [and education].

Dr. Rayan

They should also have e-learning methods ... One has to keep up with global improvements. **Dr. Hakim**

Additionally, Dr. Mazin believes that well-known scientists and experts from across the world could be invited to take part in teaching through distance-learning techniques. Indeed, technological advances in HE would contribute to the quality of universities by facilitating links between universities and between universities and experts across the world.

I see that universities tend to adopt distance learning by appointing lecturers and professors from around the world without them needing to be present. **Dr. Mazin**

Employers agree that distance education is a quality indicator in HE. Universities that establish the infrastructure to offer distance education and e-learning opportunities to students are of a high quality, from the perspective of employers.

5.2.1.3 Curriculum quality

According to Noaman et al. (2017), one of the dimensions of quality in HE is the curriculum quality dimension. The curriculum quality dimension emphasizes embedding essential skills and competencies into curriculum designs, which align with labor market needs. Likewise, this code demonstrates some employers' perceptions of curriculum quality. They perceive students being offered a variety of courses that match the needs of the labor market as an indicator of quality in HE.

Noaman et al. (2017) believe it is critical that universities reform the curriculum in accordance with labor market needs, as one of their responsibilities is to produce highly

competent graduates for the market. Half of the employers believe that university quality is significantly linked to the quality of the curriculum. The alignment of the courses to community needs is a key attribute of curriculum quality from the perspective of Dr. Yousef. Indeed, the curriculum must be periodically reviewed to keep up to date with the rapid advances in medicine.

Reforms are implemented and enhancements to the curriculum are made in alignment with the needs of society.

Dr. Yousef

In the USA, Langdale et al. (2003) claim that there is a gap between medical graduates' outcomes and residency trainer expectations. These issues demonstrate the need to align theory with practice in medical education. Likewise, Dr. Fawaz observed some deficiencies in the medical knowledge of residents coming into hospitals. He believes that this is due to limitations in curriculum design. In order to achieve quality in HE, curricula must be revisited and reviewed to ensure their alignment with the needs of the labor market. This would contribute to enhancing the quality of graduates entering the labor market.

A few of them [residents] know enough information about surgery. This is because they were not given any material about it in the university ... They were supposed to study a minor theoretical part related to surgery. **Dr. Fawaz**

According to Ilies et al. (2010), employers oppose the idea that the variety of specialization and elective courses offered to students plays a major role in improving quality status. However, in the medical discipline, it is probably the opposite. Two employers suggested offering a variety of courses and adding some specific courses to the medical programs in order to achieve quality in HE. Dr. Faisal asserts that the diversity of courses offered to students is an indicator of quality in HE.

The variety of courses offered to students is important. **Dr. Faisal**

In addition, with the emergence of quality management in healthcare and accreditation, physicians are nowadays expected to take part in quality assurance tasks along with their regular duties. Dr. Hakim claims that students should be taught the principles of quality management in hospitals before entering the medical workplace. Studying quality

management in medical colleges would save physicians time in terms of understanding quality management in the workplace.

Why aren't the standards of the CBAHI [national hospital accreditation agency] presented as an academic subject to students while they are studying? ... I think that they should be studied as an independent course. **Dr. Hakim**

Moreover, to reemphasize the point that employers perceive soft skills as a key quality attribute of medical graduates, as discussed in Chapter 7, incorporating soft skills courses into academic programs is seen as a quality attribute of universities. Dr. Bayan encourages universities to incorporate soft skills courses in medical education to assist students with their preparation for the medical workplace.

A university has to develop its individuals whether they are professors or students. For example, it can carry out leadership courses. **Dr. Bayan**

In summary, in this category, employers believe that, in order to achieve quality in HE, traditional teaching should be replaced with more innovative styles, and efforts need to be made to ensure the design of a high-quality curriculum. Saudi students have voiced their concern that teacher-centered teaching is highly emphasized in medical schools, limiting their participation in the learning journey (Altelmani & Merghani, 2017). Indeed, Melo Prado et al. (2011) claim that active learning is superior to traditional learning in terms of acquisition of knowledge and self-directed learning skills. Employers have thus called for a shift in the educational system toward a more horizontal educational system in which theory and practice teaching are delivered at the same stage and students are more engaged in their learning journey. Additionally, employers agree that incorporating technology and establishing distance education systems are quality indicators in HE. Finally, employers agree that a variety of courses that align with the needs of the labor market is a quality attribute in HE.

5.2.2 Faculty member quality

The World Bank notes three factors that denote successful universities and one of them is talented faculty members and students. Similarly, academics believe that highly skilled faculty members contribute to universities' quality (Kutbi & Hashim, 2017). A study in Saudi Arabia showed that the availability of high-quality faculty members led to student

satisfaction (Allam & Malik, 2020). Generally speaking, GCC countries experience a shortage of highly qualified faculty members in medical colleges (Telmesani et al., 2011), which negatively affects students' achievement. In this study, the majority of employers assert that the quality of faculty members underpins quality in HE. In this category, employers set out the characteristics of high-quality faculty members.

Dr. Hakim believes that the quality of faculty members is demonstrated in their teaching techniques. He added that faculty members must facilitate courses for students.

What could possibly make students succeed in a certain course or subject is the professors teaching it and the way they deliver information to their students. Back when I was studying, we had a professor of pathological anatomy who was really good so we did not have to even study from anywhere but his lectures. **Dr. Hakim**

The quality of faculty members is also linked to research productivity. Dr. Sayed stresses that faculty members' responsibilities are not limited to teaching only. Faculty members are expected to be involved in research and to participate in conferences. Indeed, the majority of employers in this study strongly agree that research productivity is a major indicator of a university's quality, as seen in Theme 3 (see Section 5.3.1). Faculty members should also foster research productivity. This is mandated in Saudi universities by the NCAAA quality standards.

University faculty should not be restricted to teaching tasks only. They should conduct research studies, be granted scholarships [and] attend international conferences. **Dr. Sayed**

Additionally, Dr. Hasan notes that in order to demonstrate quality in universities, faculty members must offer academic support to students, especially low performers. Dicker et al. (2019) found that employers regard guidance and academic support as more important than students do. It has been found that academic support helps students to gain self-learning skills and consequently employability skills (Nicol, 2010). Faculty members must ensure that they are open to students' needs. They must be accessible and available to students in order to offer support and assistance. Generally speaking, faculty members have a responsibility to

offer office hours. Indeed, office hours are assigned to faculty members and publicized to students so that faculty members can respond promptly to any queries.

Another matter that also needs attention is that when professors have around maybe 50 students and only four of them are active, they cannot focus on those four only and leave the others. **Dr. Hasan**

Generally speaking, para-academics are faculty members who are involved in and work in the labor market, such as faculty members who work in teaching hospitals, or private clinics or hospitals. The purpose of their involvement in the labor market is to gain insights into what students actually need to be taught in terms of knowledge and practical training. Dr. Reem asserts that HE is there to meet labor market demands. She believes that high-quality faculty members, especially in medical colleges, should take on the dual role of faculty members and employers, in other words, they should be para-academics.

Faculty members are expected to teach students and at the same time take part in the employment field in order to be able to experience the real life of a career and pass it on to their students. **Dr. Reem**

Dr. Bayan claims that universities have to ensure that faculty members go through continuous development in terms of general skills and theoretical knowledge. Academic leaders believe that establishing professional development and reward systems for faculty members would enhance the quality of the educational culture in medical schools (Bendermacher et al., 2020). Dr. Bayan adds that faculty members are expected to demonstrate loyalty to the university where they work. They should also dedicate their efforts and work jointly toward building the reputation of their university as this reflects the reputation of its faculty members and vice versa. Indeed, unappropriated faculty members and treating students poorly would have a negative impact on the reputation of universities (Browne et al., 1998; Khan & Yildiz, 2020).

A university has to develop its individuals whether they are professors or students ... Professors must be loyal to the university and make sure that its reputation is good, as the reputation of a university means the reputation of a professor. That is why a professor must do his best to give

back what he/she gets from the university. It is, more or less, like their home. **Dr. Bayan**

While medical students complain that teachers are authoritarian and do not provide effective feedback (Altelmani & Merghani, 2017; Hasan & Gupta, 2013), employers stress the importance of faculty members' quality as a key indicator of quality in HE. Indeed, one of the quality indicators in HE from the perspective of employers is the quality of faculty members (Udman & Heidmets, 2013). Overall, from the perspective of employers, effective teaching strategies, self-development and scientific research productivity underpin the quality of faculty members, which is reflected in the quality of universities.

5.2.3 Medical training

After completing a medical profession degree, graduates are expected to complete a one-year internship program as a graduation requirement. Internship programs are designed to stimulate students to think about their future medical specialization preferences and provide them with training opportunities. Willis and Taylor (1999) claim that the quality of HE products could be enhanced through practical training in the workplace. Rodman et al. (2013) find that employers perceive student involvement in practical training in HE institutions as a sign of quality. However, Dicker et al. (2019) argue that employers look for personal skills in graduates rather than work experience. Nonetheless, the situation in the medical discipline is quite different. Medical training and internship are core aspects of medical education and they could be substitutes for work experience.

Generally speaking, student training is essential in medical studies. To ensure a proper training program, there should be constant communication between the HEI, the SCFHS, and employers. Specific to the medical field, Post et al. (2015, p. 4) assert that recruitment is perceived as challenging because of “inadequate training/experience” and a “mismatch between residency training and job requirements”.

After students are granted a bachelor's degree in medicine, they apply for a medical specialization, which also requires practical work at hospitals. The SCFHS regulates medical specialization across Saudi Arabia. Students' specialization preferences are submitted to the SCFHS and reviewed by the Executive Council for Education and Training. These reviews are based on four factors, the applicant's degree, their medical fitness, registration with the

SCFHS, and the Saudi Medical License. Although the specialization programs are well defined by the SCFHS, the employers mentioned some obstacles that they believe students encounter when specializing. These obstacles could hinder the preparation of high-quality medical graduates.

5.2.3.1 Training experiences

Practical skills are essential for success in the medical workplace and student training is the key to preparing doctors for hospitals. Medical employers believe that some medical practices cannot be effectively taught in the classroom; students should engage in the work field to understand and master such practices (Illing et al., 2013). However, Illing et al. (2013) assert that graduates perceive themselves as outsiders in their residency years, when they are less engaged in their training. In Saudi Arabia, the NQF mandates health profession colleges to have internship and training credit hours embedded in their program design (National Qualifications Framework, 2015). This category demonstrates medical training experiences as a quality attribute in HE from the perspective of employers. Illing et al. (2013) suggest that offering on-the-job learning, i.e., learning opportunities in the medical field where trainers actually hold a role in practice, would eventually enhance the preparedness of medical graduates. The authors believe that no other learning setting, such as classrooms, is more effective than a real clinical environment in preparing graduates for the medical field. Thus, training is seen a quality attribute by employers, especially in medical education.

To ensure a high-quality training program, Dr. Adel thinks that there should be constant communication between HEIs and employers. Supervision strategies should be established to oversee the process of training and attempt to eliminate any obstacles that may arise. It has been proposed that proper communication between universities and trainers improves the acquisition of clinical skills and family history taking by students, as well as their examination results, and ultimately better prepares graduates for the labor market (Frankel & English, 2004).

Universities should send an instructor with students to accompany them. The [instructors] work with us and [the students] gain more experience. **Dr. Adel**

Indeed, Dr. Hasan asserts that supervision in training is a quality indicator in HE and students who are supervised by their universities perform better than those who lack supervision. Likewise, Brown et al. (2007) claim that proper supervision as well as adequate feedback

from supervisors would facilitate medical students' transition from the learning environment to the work field environment.

Ensuring supervision is necessary for any university, as it must look after its students. One may remark that the supervised trainees tend to work better ... Had they worked hard during the training period, they would have been able to examine more than just one patient per day. **Dr. Hasan**

Apart from emphasizing the role of student training, the selection criteria for trainers and training locations are seen as quality indicators in HE by employers. Criteria for choosing suitable training locations and qualified trainers must be available. Dr. Lina states that trainers' roles and responsibilities should be clear to all the parties involved in students' training. Additionally, Dr. Faisal remarks that training locations should be well equipped for training. These criteria would probably help to overcome any training issues that students may face. According to the NCAAA (2018), the roles and responsibilities of trainers should be shared and clarified to prospective trainers as a quality practice in universities in order to ensure fruitful training experiences for students.

My role, as a trainer, is to take them aside and teach them all about that [medical training]. I must tell him or her to enhance their level so that they don't lose their patients ... If we find [the students] lacking something, we try to cover it. **Dr. Lina**

[Training locations must encompass] recent technologies used, to interact with current needs and technologies. **Dr. Faisal**

Medical students are randomly allocated to specializations in Saudi Arabia. This could be one of the reasons behind high unemployment rates among medical graduates. Dr. Bayan believes that a medical specialization training plan should be developed to demonstrate quality in HE. The plan should align with the needs of Saudi hospitals based on regions. This would help to create an adequate distribution of medical practitioners across Saudi Arabia. Universities should work together with the SCFHS to achieve this.

There must be a strategic plan for the whole country that specifies the number of the needed doctors and personnel in

each specialty and in each hospital. Everyone should follow this plan ... Then doctors should be trained and fill those vacancies ... Some students choose their specialty according to how easy it is going to be. **Dr. Bayan**

Indeed, a study in the Eastern Province of Saudi Arabia, where the data collection took place, showed that the majority of medical students and interns prefer to specialize in internal medicine (Alshahrani et al., 2015). Indeed, medical students strive to think ahead and choose their specialty based on the lifestyle associated with that specialty (Alshahrani, 2015; Lefevre, Roupret, Kerneis, & Karila, 2010; Newton, Grayson, & Thompson, 2005). However, as Dr. Bayan suggested, a medical specialization plan as a quality indicator in universities would probably resolve current and possibly prevent potential random allocation and unemployment among medical graduates.

5.2.3.2 Training location

According to AlShahrani et al. (2015), medical students are more interested in undertaking clinical training locally, in Saudi Arabia, than abroad. This puts pressure on the government to ensure that adequate and sufficient training locations are available for prospective medical graduates. This code demonstrates employers' views on training locations as a quality attribute in HE.

Two employers assert that university hospitals are a key determining factor of the quality of universities. If there is no hospital attached to the university, this could hinder medical graduates in the successful development of their practical skills, in the view of Dr. Hakim and Dr. Yousef.

If medical colleges do not have attached hospitals, they will not be able to provide proper doctors who are ready to work.

Dr. Hakim

Weak graduates' skills are observed among graduates who studied at a university that has no teaching hospital attached to ... in comparison to graduates who studied at a university with a hospital attached to. Graduates who are trained at a teaching hospital are more competent because

they have been properly trained on real patients. **Dr.**

Yousef

Although the majority of medical training in Saudi Arabia takes place in public hospitals, some, especially private universities that lack links with university hospitals, tend to collaborate with private hospitals to provide training to their students. Indeed, Dr. Adam, who works at a private hospital, sees that involving private hospitals in medical training is a quality indicator in HE. He elaborated on the successful experience of public universities engaging private hospitals in teaching. Students who visited the private hospital in the early stages of their medicine studies benefited from this experience in terms of practicing theory on real patients.

They [a public university] used to send us students every month in groups ... students used to accompany me while I worked and examined patients. Students then would discuss with me any questions they had by the end of the shift ... Then a colleague from the university would help me evaluate this group of students ... We used to agree on certain topics with their professors, so that we made the students examine the patients that had cases related to what they were studying at that time. **Dr. Adam**

Nonetheless, it remains the responsibility of universities to ensure that students' training is proceeding properly and that students have opportunities to meet patients. Dr. Yousef and Dr. Rayan, who both work at private hospitals, strongly refuse to involve private hospitals in the training process. Dr. Yousef believes that patients in private hospitals pay for the services they receive and dislike being seen by students.

When a graduate has studied in a university that has no hospital belonging to it ... They [universities] rely on collaboration with other hospitals where a number of conditions and rules are set in order to accept students for training. For example, sending students to a private hospital would be somewhat inconvenient for patients, who might reject being seen by students. And this is a right of theirs.

Dr. Yousef

since we are a private hospital, we do not expect anyone to come to learn here. Graduates can be trained here, get a job description and work on this basis. **Dr. Rayan**

To sum up, according to a study by Dicker et al. (2019), when defining quality, employers show less interest in teaching quality and more in the quality of the graduates. However, the situation in medical education is quite different. Although employers emphasized the quality of medical graduates (see Chapter 7), they also highlighted the quality of teaching and medical training as a key indicator of HE quality. Similarly, when universities go through the accreditation process to demonstrate their compliance with quality standards, the teaching and learning area is one of the most important standards in quality, apart from scientific research, from the perspective of the NCAAA.

As the data demonstrated, some employers commented on the medical educational system in Saudi Arabia. From their perspective, a horizontal education system would indicate quality more than the traditional system. Moreover, with regard to university quality, the quality of the medical curriculum is strongly linked with preparing effective teaching materials that are aligned with the needs of the labor market. In addition, to demonstrate quality in HE, faculty members must deliver effective support for students and for scientific research.

5.3 Theme 3: Scientific Research and Engagement Culture

According to Rodman et al. (2013), employers believe that research activity and engagement in society are two of the most important attributes of universities with high quality status. In this study, the scientific research and engagement culture theme emerged from the analysis, indicating employers' perspective on research and engagement in society as quality attributes of universities. Employers believe that research studies give an indication of quality of universities in Saudi Arabia and how a collaborative approach, to some extent, could elevate the quality of these studies. To reemphasize research productivity as a quality indicator in HE, the NCAAA sets out a separate area of quality practices for scientific research.

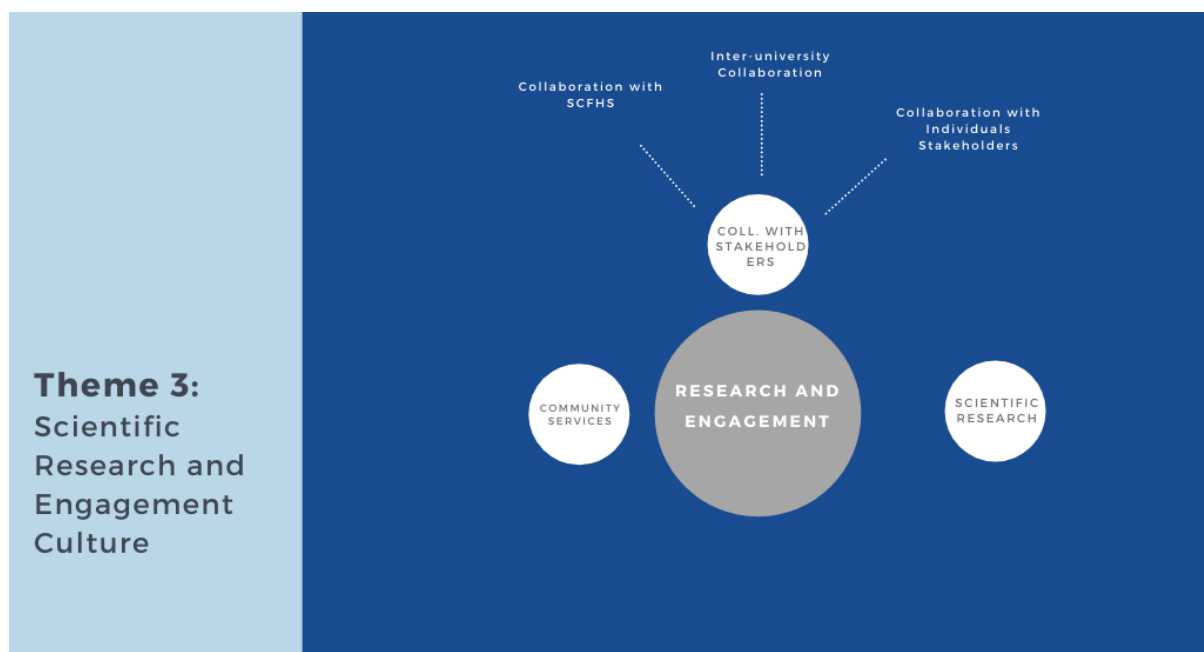
Additionally, in order to achieve a high quality status, universities should be responsive to the voices and needs of stakeholders. They should create partnerships and relationships with all the stakeholders in order to respond to their expectations and needs (Srikanthan & Dalrymple, 2010). In this regard, Saudi universities follow the quality standards of the NCAAA, which mandates community services and the involvement of stakeholders in HE (NCAAA, 2018). This theme is also designed to explore the views of employers on

community services and collaboration opportunities for universities as quality attributes in HE. Indeed, employers believe that universities should expand their scope to involve more stakeholders in HE. Employers believe that the quality attribute of collaboration with stakeholders includes inter-university collaboration, collaboration with individual stakeholders, and collaboration with the Saudi Commission for Health Specialties.

Thus, this theme consists of three categories of quality attributes in HE from the perspective of employers: scientific research, community services, and a culture of collaboration with stakeholders. These three categories break down into three codes, as shown in Figure 5.

Figure 5

Scientific Research and Engagement Culture Theme, Categories and Codes



5.3.1 Scientific research

All universities in Saudi Arabia focus on research productivity as part of their mission, as per the requirements of NCAAA accreditation (NCAAA, 2018). The NCAAA mandates Saudi universities to establish a scientific research deanship to strictly govern research productivity, and to maintain rigid policies and regulations concerning research.

According to Monica et al. (2011), employers do not perceive scientific research as an approach that will achieve quality in HE. However, in this study the employers highly praised research productivity as a quality attribute of universities. Similarly, in Oman, employers

emphasized scientific research productivity as a quality indicator (AlAmri et al., 2020).

Scientific research is crucial as a quality attribute in HE, according to approximately half of the employers. Dr. Sayed asserts that he judges the quality of a university from its research productivity, specifically international research studies.

A university's quality also depends on the number of research studies it carries out, especially the international ones. **Dr. Sayed**

Dr. Adam also praises international publications. In Saudi Arabia, the majority of research studies in health sciences are published in local journals (Ul Haq et al., 2020), but according to Dr. Adam, the evaluation and revision criteria of international journals are more rigorous than those of local journals. Feedback from international journals could have a significant impact on the quality of Saudi Arabian research. This makes international publications a quality attribute of universities. In other words, in order to achieve quality, universities must consider publishing research studies beyond local journals, and publish internationally.

Abroad, they do not publish any research paper unless it is 100% perfect. That is because the journal has read every single word of the research paper. That is how a journal gains its reputation. For example, the British Medical Journal gained its reputation through the credibility of the research papers it publishes. **Dr. Adam**

Dr. Adel asserts that in order for universities to attain a high quality, they must emphasize research productivity. He gave the example of universities that conduct research effectively and hoped that universities in Saudi Arabia would follow the same approach. Despite his perspective of research productivity in Saudi Arabia, Ul Haq et al. (2020) assert that research publications in the health sciences discipline have undergone marked growth in recent years, with the majority conducted by HEIs and not hospitals. This indicates that the importance of research studies and publications is being recognized in Saudi Arabia. However, Dr. Adel, as an employer, might not be fully aware of or involved in HE and he might not exactly understand the research situation in Saudi universities. Nonetheless, research productivity is definitely a quality matter in universities.

If you know about MIT in America, they brought many faculty members ... They turned their society into a research society ... We are missing this in our university.

Dr. Adel

However, although many research studies are conducted in Saudi universities, Dr. Adam criticizes the fact that, in comparison with research worldwide, research studies produced in Saudi Arabia are quite repetitive and do not make a contribution to the literature. From his perspective, some Arab researchers tend to repeat studies that have been already conducted in the west. Rather than attempting to design a new study that would contribute to the literature worldwide, some Arab researchers may take huge advantage of the geographical gap in the literature and copy studies from the west to an Arab country. Thus, it could be concluded that research productivity as a quality attribute comprises research studies that are characterized by their originality and high contribution to knowledge. Indeed, AlAmri et al. (2020) assert that, from the perspective of employers, research studies must focus on the needs of the community.

Our problem is that we always do research studies on old topics; we just modify old research papers ... That is why we do not provide the world with anything new. **Dr.**

Adam

Additionally, Dr. Bayan proposes that establishing collaboration with hospitals, for the purpose of research, is a quality attribute of research studies. This collaboration would be mutually beneficial for universities and hospitals. Employers could work jointly with universities to conduct medical research. This form of collaboration could enhance research quality and overcome the issues in research originality. Indeed, the establishment of collaborations was dominantly discussed during the interviews with employers, as seen in the next category (see Sections 5.3.2 and 5.3.3).

If they would like to do research on a certain illness, they should come here [hospitals] and benefit from us and from our patients. This improves the service quality here and benefits the researchers themselves. Everybody benefits from such research studies. **Dr. Bayan**

In summary, employers assert that research studies are a quality attribute in HE. The higher a university's productivity in research, the higher the quality it can achieve, from the perspective of almost half of the employers. They believe that in order to consider research productivity a quality indicator, studies have to meet certain conditions: to be original, collaborative, not repetitive, and published in international journals.

5.3.2 Community service

The quality standards determined by the NCAAA encourage universities to provide a service to the community. This could range from participating in a gallery to delivering free medical check-ups at a community services event. Every discipline or academic department could design community services that fit its purpose. In the case of medical colleges, this could be offering free screening, volunteering in a medical center or simply promoting health-related information such as diabetes awareness campaigns. Indeed, five participants agree that providing a community service is a quality indicator of universities.

Most employers believe that the role of universities goes beyond their boundaries and that the local community should be involved. Worldwide, community services are mutually beneficial for the community itself and for the universities and students. Dr. Bayan believes that employers would acknowledge the quality and reputation of universities if they were committed to serving the area where they were located.

A university is the leader in everything, so when it provides such services it means that this university must be really good. It does not only support education; it supports the community as well. That is actually the role of a university: serving the community and educating future doctors. **Dr.**

Bayan

Additionally, Dr. Sayed agrees with Dr. Bayan that offering services to the local community is a quality matter for universities. He adds that university hospitals, being part of universities, should also serve the community.

The first thing that matters is that it [a university] has to benefit the region surrounding ... serving the surrounding regions and benefiting people through the university hospital ... in order for it to give the university a good reputation. **Dr. Sayed**

Although employers value universities' services to the community, Dr. Adel claims that universities should emphasize the quality of these services in order for it to be considered a quality attribute. What matters most when providing services to the community is the type and significance of these services. Indeed, the quality of community services is more crucial than the quantity of services provided.

Efforts [in community services] are really weak and do not really contribute to the community ... [Universities] must work harder ... There must be a real project that contributes to the community. More than just a diabetes day ... I am not saying stop diabetes day or cancer day. I am just saying that such activities can be done by any small health center. I want something good done that matches the quality of a university ... When the employer hears about that kind of stuff, he would say that this university is very good and very active as well. **Dr. Adel**

Unlike NCAAA standards, few employers doubt the value of community service to the quality of universities. Dr. Hasan does not believe that a diabetes day or breast cancer day have a large impact on the community. He expects universities to undertake massive beneficial projects that truly serve the community. Ultimately, these services would reflect the university's quality and give the university a positive image among employers.

Universities, when they, for example, launch an awareness campaign of diabetes or have Breast Cancer International Day, definitely will not make a big difference because breast cancer or diabetes exist all year. However, if it were weekly or monthly, then it would be effective. Other than that, it is just commercial. **Dr. Hasan**

On the other hand, a minority of participants believe that community services are commercial and that such services are a way for universities to market themselves; they are not linked to the quality of universities. Nonetheless, the NCAAA (2018) requires every university to comply with the regulations for running a community service. The university as a whole, including staff, students and faculty members, are required to become involved in community service. Some employers have a different view on community service. From the perspective

of Dr. Mazin, community service brings no genuine advantage to the university's quality or to the students.

Community service is useless. I believe that these are types of marketing actions and do not add anything for the students. **Dr. Mazin**

To sum up, according to AlAmri et al. (2020), employers believe that community service is an important indicator of quality in HE and that it enhances the reputation of a university in society. Similarly, in this study, some employers believe that universities' roles go beyond their own boundaries. They believe that the university's involvement in the community is a quality attribute of universities and that it is vital in terms of delivering services to the wider populace. However, employers believe that universities should be selective over the services they provide and ensure that they organize meaningful services. In Saudi Arabia, the provision of a community service is very common among universities and across all disciplines; they were occurring before the NCAAA specified community service as a quality indicator. It is good to know that universities' efforts to conduct community service are not in vain and that they are seen as a quality indicator by potential employers.

5.3.3 Collaboration with stakeholders

There is a wide range of external and internal stakeholders in HE, including students, faculty members, staff, society, employers, alumni, etc. Employers were asked whether stakeholders' general involvement contributes to quality in HE. The majority of employers believe that the establishment of systems to allow stakeholders to play a role in HE is indeed a quality attribute. In addition, Bendermacher et al. (2020) claim that medical students and academics believe that it is essential to incorporate different views on programs, curricula and training plan developments. Similarly, in this category, employers perceive that a high-quality university establishes collaborations with all types of stakeholders and other universities; their views go beyond the development of academic and training programs. However, medical students and academics think that involving external stakeholders in HE is challenging (Bendermacher et al., 2020). Sustainable development is indeed achieved by the availability of stakeholder feedback systems in HE (Rodman et al., 2013).

This category demonstrates the views of employers about collaboration opportunities as a quality indicator in HE. From the perspective of employers, these opportunities fall into a

number of categories: inter-university collaboration, collaboration with individual stakeholders, and collaboration with the SCFHS, as seen in the codes later in this category.

5.3.3.1 *Inter-university collaboration*

Some employers suggest that building communication channels between different universities, known as inter-university programs, is a quality attribute of universities. Creating this collaborative culture would help universities to share experience, staff, resources, and so on. Students could freely gain access to the resources of multiple universities, including courses. An internationally recognized form of university collaboration is student exchange programs, where students travel abroad to undertake their studies, for instance a semester or two, in a different country. Such programs are beneficial in terms of exploring different cultures and exchanging experiences and knowledge in a different context. Some employers strongly support student exchanges between universities as a demonstration of the quality of a university. Dr. Fawaz refers to this as ‘inter-university programs’, whereby students rotate within multiple universities.

We lack something here nowadays. It is called inter-university programs. We should not leave students stuck with their university while they can benefit from rotations with and materials at other universities. **Dr. Fawaz**

Additionally, Dr. Sayed and Dr. Hakim believe that this program is advantageous for students as it exposes them to different styles of teaching and resources, and exchange experiences with students from different universities. This is probably why these programs underpin quality in HE.

In addition [to the benefits of student exchanges], interacting with different kinds of students leads to sharing experiences. **Dr. Sayed**

If such a thing is applied [inter-university collaboration], benefit will be derived from experimenting with different models of education. In addition to interacting with different kinds of students, which leads to sharing experiences ... So sharing experiences among universities is very important as well as exchanging professors, not only students. **Dr. Hakim**

Indeed, Dr. Adam thinks this collaboration should expand to include universities abroad and not be confined to local universities; students should be exposed to different cultures.

The links that a university has with other overseas universities are important so that there would be cultural exchanges between students ... It is important for a university to have links with other universities abroad, so that it would not only be active domestically. **Dr. Adam**

Dr. Sayed adds that having international students could play a role in enhancing a university's quality, reinforcing the view that building an international reputation enhances a university's quality, as identified in Theme 4 (see Section 5.4.1). Similarly, the NCAAA has recently added a new quality standard that encourages universities to recruit international students to Saudi universities. This practice is not new in Saudi Arabia, but international students have so far been limited to specific disciplines such as Islamic Studies in certain universities. However, the NCAAA now encourages all Saudi universities and other disciplines to put in place a plan to attract international students.

In order to enhance the university's reputation ... it should have students from all over the world. **Dr. Sayed**

Moreover, Dr. Adel suggests that inter-university programs achieve quality because they help to close gaps in resources and the availability of faculty specialties. Therefore, inviting faculty members from a variety of universities might enrich students' and faculty members' experiences.

If the university has a certain project and it knows that there is a deficiency in a certain specialty, it is okay to make a contract with a specialized person for that certain project so that it benefits my students. I could get them an expert or two who might benefit them practically and theoretically ... This is a great benefit for students. **Dr. Adel**

Employers assert that collaborating with national and international universities is a quality attribute of universities. Establishing connections with universities and exchanging students are indeed massively beneficial for students, staff, and the university as a whole, from their perspective.

5.3.3.2 Collaboration with individual stakeholders

Universities are expected to make an effort to maintain contact with stakeholders and ensure their satisfaction. Generally speaking, universities could not operate alone without involving a wide range of internal and external stakeholders, as seen in the Literature Review Chapter (see Chapter 3). Inviting stakeholders to be part of delivering services in HE is crucial and indeed seen as a quality attribute of universities. In this code, the term ‘individuals’ indicates the persons who receive and benefit from the services of universities, such as students, alumni, and potential employers.

According to the NCAAA quality standards, it is essential to seek feedback from a variety of stakeholders. Indeed, NCAAA standards encourage HEIs to obtain the views of all types of stakeholders. As per the NCAAA quality standards, various questionnaires are designed for students and staff and these are disseminated regularly throughout the academic year, covering topics such as job satisfaction, course satisfaction, and final year satisfaction. In addition, as part of complying with NCAAA standards, employers and alumni are contacted on a regular basis in order to disseminate news about universities and to obtain their feedback about the university’s performance. In this study, employers’ views strongly correlate with NCAAA standards. Employers highlight collaboration with stakeholders as a quality indicator and they reinforce its benefits.

With regard to feedback from stakeholders, Dr. Fawaz asserts that in order to enhance quality, universities must listen to their students’ voices. Indeed, NCAAA mandates that universities must ensure that their students are satisfied with the courses, university experience, faculty teaching quality and much more. Students’ satisfaction is measured and maintained through continuous satisfaction evaluation surveys throughout the year. He adds that their voice, as employers, also needs to be reviewed.

A very important thing that has to be noted is that students themselves, and we here in the medical working field, have an opinion that should be taken into consideration. Because the students have to be satisfied with the university's services. **Dr. Fawaz**

Additionally, Dr. Yousef sees that feedback from alumni is a quality attribute of universities. He thinks that obtaining feedback from alumni is more effective than seeking feedback from

students. Alumni feedback can identify great enhancement opportunities in teaching quality, in his opinion. Indeed, alumni groups are a valuable source of feedback for improvements as they have experienced both educational studies and the actual labor market experience.

You could reach alumni that would see you have taught things that were not useful to us and things we need at work that were not taught ... When someone is a student, he/she does not see it this way. They look for what is easier and less difficult ... There is a day where alumni are invited to discuss these matters. It was useful and some feedback was beneficial and action was taken based on this feedback to change certain things. **Dr. Yousef**

In Saudi Arabia, universities are actively encouraged by the NCAAA to involve employers in HE (NCAAA, 2018). The voice of employers should be heard in order to gain insights into how well universities are performing. The majority of employers believe that their involvement in HE indicates the quality of a university. They stress the importance of their involvement in HE for the quality of both the university and its graduates. Dr. Rayan demands the creation and maintenance of connections between universities and public and private hospitals. He believes these three entities should work together in order to elevate the quality of medical education.

Cooperation between practical institutions, for example private hospitals and university hospitals, and universities, should all be one unit. **Dr. Rayan**

In particular, Dr. Rayan raises the importance of inviting and actively involving employers in conferences and academic events organized by universities.

It is very important to take part in conferences and symposia to get the chance to express our opinion. **Dr. Rayan**

Dr. Adel thinks that employers' involvement in student assessment helps them to build an idea of the level of a specific university and the medical students studying there. In return, students who show high-quality competency have better chances of being recruited.

If somebody asked me to attend an assessment [of students], even if I just sat there listening, I would see that the students are good. This would make me accept the university even

more ... That would help them later on, when there is a competition in hiring doctors, as I would already know that they are better than others are. **Dr. Adel**

Dr. Bayan compares the performance of universities to cooking a dish, which is the graduate. Employers should give feedback on how well the dish is cooked.

It is like when you cook a dish. How would you know if you are a good cook or not? From the people who eat this dish and give feedback. If their feedback is good, then you are a good cook. If not, then your product must not be good enough. **Dr. Bayan**

Involving employers in HE is beneficial for both students and employers. Dr. Hasan perceives employers as a perfect source of information as they can share their experience of working in the medical field with students.

Especially when the doctor ... invited is highly qualified, speaks to freshman students, and illustrates for them their future career life. **Dr. Hasan**

However, two employers had different views. Dr. Reem believes that teaching is the responsibility of universities only. From her perspective, employers' involvement in HE is ineffective. However, she proposes that faculty members should get involved in the labor market to help satisfy its evolving needs. Indeed, in Saudi Arabia, it is very common in medical schools for faculty members to get involved in the labor market, in either university hospitals, or private hospitals or clinics. However, their involvement does not replace the active involvement of employers in educational systems. Employers provide different insights into faculty members being involved in the labor market.

It is not important at all. Employers cannot interfere in the educational system ... Faculty members are supposed to teach students and at the same time take part in the labor market in order to be able experience the real life of their career and pass it on to students. **Dr. Reem**

Additionally, Dr. Mazin notes that the needs of employers and hospitals vary, which could make seeking out employers' opinions problematic. Every hospital operates differently, which creates an obstacle to identifying one that is representative of the whole labor market.

He thinks that obtaining feedback from employers would result in scattered needs and requirements.

Views on the qualified graduates that fit to hospitals differ from hospital to hospital ... Every hospital has its own system. So, universities would get lost between hospitals and their needs. **Dr. Mazin**

In summary, in this section, employers assert that obtaining feedback and involving internal and external stakeholders in HE are quality attributes of universities. Employers believe that a quality attribute of universities is ensuring that the voices of alumni and students are heard. Moreover, involving employers in HE and providing feedback about university performance and graduates' outcomes is a quality attribute of universities, from the perspective of employers. Indeed, Pham (2019) claims that employers' involvement in HE comes in different forms such as taking a role in quality assurance activities or in designing and developing curricula and academic programs. Employers emphasized that their role includes providing feedback, assessing students, participating/attending conferences, or providing career orientation. Moreover, employers greatly stressed the quality attribute of involving them in medical training, as seen in Theme 2 (see section 2.4). The discussion in this section indicates that ideas about quality in terms of employers' involvement in HE are complex.

5.3.3.3 Collaboration with the Saudi Commission for Health Specialties

For medical education in particular, the Saudi Commission for Health Specialties (SCFHS) is the official entity in Saudi Arabia that governs health-related education. Three employers stated that one of the quality attributes of universities is involvement with the SCFHS, particularly in the training plans of medical students. To achieve quality, universities are expected to involve the commission in the planning of students' medical education and training. Indeed, the commission actually plays a major role in HE. Universities and the commission work together to create a successful curriculum and training plans for students and trainees in Saudi Arabia. As employers are to some extent not highly involved in HE, they are not fully aware of how the SCFHS is engaged in medical education. However, employers' opinions about SCFHS involvement in HE education as a quality attribute in HE re-emphasizes the commission's significant role.

Employers think that universities alone cannot successfully meet the labor market's demand for quality. However, the SCFHS should aid universities in this matter, according to two

employers. Dr. Sami and Dr. Mazin claim that the SCFHS is expected to constantly understand and oversee the rapid changes in the labor market in order to help enhance medical education.

Universities cannot be responsible for ensuring medical graduates from all specializations are up to date and competent, due to the large number of medical fields that the university offers ... The SCFHS should take responsibility for ensuring that graduates develop properly and in accordance with labor market needs. **Dr. Sami**

They can build communication channels with SCFHS.

They are aware of what the market needs based on periodic reviews. **Dr. Mazin**

Although the employers raised some issues in student training, as described earlier in this chapter (see Section 5.2.4), Dr. Bayan argues that universities, along with the SCFHS, are responsible for resolving any existing flaws and fulfilling medical training quality. In other words, in order to achieve high quality in medical training, the SCFHS must collaborate with universities to ensure the delivery of a high-quality training plan. Although employers mentioned a number of issues in medical training programs, the SCFHS is actually actively involved in planning and designing academic and training programs in Saudi Arabia. However, Dr. Bayan's opinion could be perceived as a suggestion that more effort is needed on the part of the commission to achieve quality in medical training.

Universities, along with the SCFHS, are trying to set rules and regulations to make matters better [in training]. Everything must be loud and clear, and done according to the one and only approved method, which must be followed by everyone. **Dr. Bayan**

Universities need to build various channels and to collaborate with different stakeholders in society and beyond to achieve quality in HE. One of the quality attributes of a collaboration culture is involving the SCFHS in medical education planning and training. Indeed, as with any industry in the world, universities cannot operate and succeed in achieving their purposes and goals in isolation, by themselves.

In summary, this theme emerged from data analysis showing that employers perceive

research productivity, community service and collaboration with stakeholders as quality indicators in HE. According to NCAAA quality standards, universities should work closely with a wide range of stakeholders, engage in the community by providing services to the public, and actively conduct research studies. Employers showed interest in scientific research as a quality indicator of universities, however from the point of view of some employers, research in Saudi Arabia has some issues that require attention to elevate its quality. Employers believe that international publications and collaboration with other universities and hospitals would elevate the quality of research.

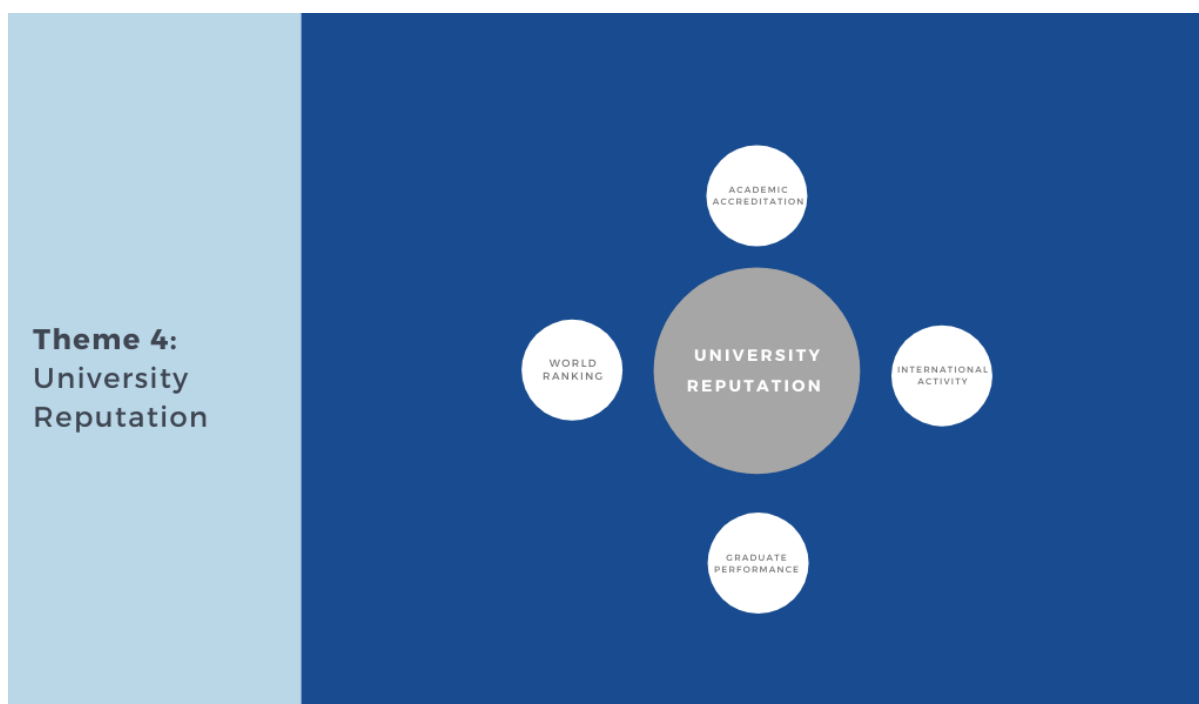
Additionally, employers believe that establishing collaborations with multiple universities, individual stakeholders, and the SCFHS is a quality indicator of universities, similar to the NCAAA quality standards. To achieve quality in HE, universities are expected to build networks with national and international universities, obtain feedback from different internal and external stakeholders, and work closely with the SCFHS. Indeed, these quality attributes are practiced in most Saudi universities, as required by the NCAAA.

5.4 Theme 4: University Reputation

This theme covers the approaches that a university could adopt to build a reputable image in the community and worldwide. Generally speaking, any practice undertaken by HEIs could help to build a reputable image in society. In this study, the interview data from employers' discussions about universities' image as a quality measure can be grouped into four categories: international activity, graduates' performance, world ranking, and academic accreditation, as shown in Figure 6. The reputation theme emerged from the data analysis, where employers linked a university's reputation to its quality. This theme provides insights into which practices employers believe will build a good reputation and consequently achieve quality in HE.

Figure 6

University Reputation Quality Theme and Categories



There is an assumption that institutions with a high reputation are likely to produce more competent graduates for the labor market (Velasco, 2012). In this study, employers asserted that medical graduates are the key factor that build the reputation of a university. Similar to Hesketh (2000), employers agreed that medical graduates' performance in the labor market indicates and reflects the quality of universities.

Moreover, Ramirez and Berger (2014) consider accreditation and international ranking as two major examples of quality practices that take place to evaluate and define the quality of HE. Although these two practices have received a fair amount of both criticism (e.g., Amaral & Rosa, 2010; Hoecht, 2006; Kundu, 2016) and praise (e.g., El-Maghraby, 2011; Harvey & Williams, 2010), there are core motives for maintaining the image and reputation of a university. The employers' perceptions of the validity and effectiveness of academic accreditation as a quality attribute in HE differed. However, the majority of employers showed an interest in world ranking as a quality attribute in HE. This theme demonstrates employers' perspectives of academic accreditation and world ranking as a quality measure of HE.

5.4.1 International activity

Employers were asked to specify which approaches universities should adopt in order to build a respectable reputation among employers. In this study, some employers agree that

collaborating with international institutions and promoting themselves internationally is a quality attribute of a university. This was because these practices build a prestigious reputation for a university and ultimately indicate the quality of that university, not only locally but also worldwide. In line with research productivity, community service and collaborations (see Sections 5.3.1, 5.3.2 and 5.3.3), some employers argue that this should go beyond the local context.

Employers strongly believe in the significance of a university's efforts to widen its operations so that they are worldwide. Dr. Sayed thinks that collaboration with international institutions, in terms of conducting research, would elevate a university's image among employers. Although some universities in Saudi Arabia do not take dual affiliation publications into account for faculty promotion purposes, employers believe that the practice of collaborating with international universities would enhance the research outcomes. Indeed, establishing international collaboration with institutions abroad is highly popular in Saudi Arabia. Ul Haq et al. (2020) assert that Saudi Arabia has produced research studies in collaboration with several different countries, mostly with Egypt and the USA, followed by the UK. These collaborations, especially with educationally advanced countries, will help to develop and enhance teaching and consequently improve the quality of HE in Saudi Arabia.

A university's quality also depends on the number of research studies it carries out, especially international ones ... This will lead the university to be acknowledged internationally, and have students from all over the world.

Dr. Sayed

In addition, Dr. Adam believes that international activities in terms of connections with universities abroad are beneficial for the image and quality of the university.

It is important for a university to have links with other universities abroad, so that it is not only active domestically. **Dr. Adam**

In summary, a few employers urge universities to expand their collaboration channels and involve international institutions in order to build a global reputation and consequently give an indication of their quality. International activity could also be achieved in the form of international research studies and partnerships with universities abroad. From the perspective

of employers, these international activities grant a university a good reputation, which in turn indicates how quality is achieved within that university.

5.4.2 Graduate performance in the labor market

Graduate performance in the labor market was the employers' most common answer to the question of how universities could establish a sound reputation. Dr. Mazin claims that the ability of universities to fully prepare graduates for the labor market helps them to build an outstanding reputation among employers. However, there is a disconnection between assessment methods and students' actual ability to perform in the labor market. Although implementing assessments that are not challenging is more likely to guarantee high marks, it ultimately leads to a poor performance in the labor market. Indeed, employers were more concerned about the ability of graduates to perform in the labor market than about their grades (see Theme 5).

If the university is of poor quality and produces less-competent graduates, this would definitely impact its reputation. Some universities tend to help students pass their exams or design very easy exams so students get high marks. Unfortunately, this harms the reputation of the university. The poor quality of graduates from these universities is revealed in hospitals and we discover that the university is very poor. It then suffers from a bad image in society. **Dr. Mazin**

Almost all the employers emphasized that graduates working in the medical field reflect the quality of their alma mater. The majority of employers strongly believe that a university's quality correlates significantly with its graduates' performance in the labor market. Dr. Reem asserts that the performance of graduates in the labor market gives an indication of the university's quality level, and vice versa.

The graduates are the ones who build a good or bad reputation. The level of their competency and skills influences the university's reputation. **Dr. Reem**

Yet, Dr. Fawaz thinks that in order to develop a correct impression of universities, it is necessary to base the evaluation on several cases of graduates across multiple years.

When we have graduates here at the hospital from different universities, their knowledge reflects their university's quality. Therefore, this cannot be defined based on just one graduate; there must be several cases. **Dr. Fawaz**

In relation to graduates building a reputation for universities, university image, which is affected by poorly skilled graduates, could reduce recruitment opportunities for prospective graduates from the same university. Dr. Mazin thinks that employers could have a perception that if one graduate from a particular university performs poorly, all graduates from that university lack the requisite skills and knowledge.

The poor quality of graduates from these universities would be revealed in hospitals and we would definitely discover that the university is very poor and it would suffer from a bad image in society. **Dr. Mazin**

Dr. Yousef asserts that employers prefer to recruit graduates from universities that have a good reputation. On the other hand, Willis and Taylor (1999) perceive that graduates build reputation in the labor market.

People apply for job at this hospital from different countries and universities that we don't know about. And we do not know how their work is, so we usually exclude them from interviews. **Dr. Yousef**

However, individual cases of graduates do not necessarily damage the image of a university. It is impossible for one university to produce graduates that are all skilled at the exact same level; there is always a variety in the level of graduates' performance. Dr. Yousef claims that individual cases of excellent graduates might reflect these students' talents rather than the university's quality.

A problematic aspect of evaluating universities is to measure the quality of graduates. Some excellent students graduate from low-quality universities and vice versa. **Dr. Yousef**

However, Dr. Hasan claims that when it comes to recruitment, employers give equal opportunities to all applicants. They tend to recruit graduates for their skills, not for the

university they graduate from. This aligns with their views on the significance of medical graduates' soft skills (see Chapter 7).

Suppose I have 10 applicants, five of whom have graduated from a well-known university. That does not automatically mean that the other five do not stand a chance. Some other things help us determine who is more appropriate. **Dr. Hasan**

Overall, this category re-emphasizes the discussion in theme 2: Educational Quality. Many universities worldwide market themselves as preparing employable graduates and having high employment rates among their graduates. Thus, it could be said that meeting teaching quality standards in order to deliver an optimal learning experience for the students will help to prepare highly competent and desirable graduates, and ultimately build a sound reputation for that university within the labor market.

5.4.3 World ranking

World ranking has recently become a matter of interest for HEIs in Saudi Arabia. According to the 2030 Vision for Saudi Arabia, the target is to have five Saudi universities in the world top 100 by 2030 (Saudi Vision 2030, 2018). Although ranking systems have been criticized and are believed to deal with the worldwide image and recognition of a university rather than measuring its actual quality (Hazelkorn, 2011), in this study, more than half of the participants distinguish positions in world ranking systems as a quality attribute of universities. The higher the university is ranked, the higher the level of quality that it is believed to have reached.

Employers believe that world ranking systems are a main indicator of a university's quality. Indeed, Dr. Mazin assures that world ranking position underpins a university's quality and Dr. Yousef links world ranking to the performance of universities.

The university is good, has a good system, policies and rules, is able to enhance its services. These are known from the world ranking. **Dr. Yousef**

[A university's quality is] based on national ranking and where it is positioned compared to other universities. **Dr. Mazin**

Dr. Rayan claims that ranking decisions are made following an intensive evaluation of the key practices of universities. This is probably why entering the ranking systems is a quality matter for employers. They believe that world ranking systems work on the basis of the research studies, number of faculty members and teaching quality of universities across the world.

These ranking are not set randomly. They are based on quality and intensive studies. They observe practical work and how students are being taught. Absolutely, this is important for universities. **Dr. Rayan**

Additionally, Dr. Fawaz asserts that world ranking is a crucial practice to promote the quality of a university on the labor market and that it ultimately raises the employment chances of its graduates.

It is very important because the world ranking depends on the universities' research, number of professors and their publications. Therefore, it will reflect the fact that this university is qualified and anyone graduating from there will have a priority. **Dr. Fawaz**

On the other hand, some employers consider ranking a waste of time and they do not believe that it indicates the quality of universities. Dr. Adel believes that there is significant concern about scientific research that needs to be taken into account prior to emphasizing world ranking (see Section 5.3.1).

[World ranking is] such a disaster. It does not reflect anything at all, because there is this whole research problem. **Dr. Adel**

In summary, world ranking is seen as a quality attribute of universities by medical employers. Although a small number of employers doubt the usefulness of world ranking, the majority of employers assert that world ranking systems give an indication of a university's performance and ultimately its quality level.

5.4.4 Academic accreditation

The globalization of HE has forced educational institutions to recognize well-defined internationalized quality practices such as academic accreditation and world ranking. In this regard, the Higher Council of Education in Saudi Arabia launched the NCAAA in 2004 to regulate the performance of HEIs (NCAAA, 2021). Ultimately, the center will grant accredited status to institutions that adhere to its standards. Although academic accreditation is quite expensive in terms of expenditure on the quality requirements and the time spent to meet the standards of accreditation agencies, all HEIs in Saudi Arabia are required to earn a national accreditation (NCAAA, 2018). Employers in this study believe that academic accreditation is an indicator of the high quality of universities. Universities granted an accredited status are distinguished high-quality universities, from the perspective of most employers.

The majority of employers endorse academic accreditation. Dr. Reem sees accreditation as a means of upgrading universities' image as well as the value of their graduates in the labor market.

Both of them [world ranking and accreditation] are very important for the image of the university and [their] graduates. This would give an advantage to graduates when applying to jobs in the future. **Dr. Reem**

In addition, Dr. Yousef perceives accreditation as a significant opportunity for universities to be externally evaluated by experts, who can offer insights into any gaps and deficits in their system. This approach is therefore meant to ensure continuous quality improvement. Indeed, Saudi academics believe that the ultimate benefit of academic accreditation is that the periodic reviews of accreditation create and promote a sustainable culture of quality in an institution (Alrebish et al, 2017). Moreover, it has been claimed that graduate performance in license examinations is positively influenced by the process of obtaining accreditation (Roy et al., 2020). Ultimately, accreditation processes could be seen as a quality means of bringing enhancements and improvements to universities.

Accreditation is important as it allows an external reviewer to evaluate and observe what we are doing and how we are performing. And the people/staff who work at the institution cannot see or detect deficiencies. So it is a means

of evaluating by an external reviewer and shedding light on weaknesses. This is a positive and significant practice. **Dr.**

Yousef

In general, there are two types of academic accreditation in Saudi Arabia: national and international. These are presented in the two following codes. National accreditation is a compulsory accreditation that is governed and implemented nationally in Saudi Arabia by the NCAAA. On the other hand, international accreditation is specifically tailored to particular disciplines and specializations that are controlled by foreign agencies, such as the WFME (World Federation for Medical Education) accreditation for medical colleges. This type of accreditation is not compulsory but highly favored by academic programs. Dr. Mazin believes that the value of accreditation to the labor market depends on the type of accreditation and how it is conducted and gained. Dr. Hasan adds that international accreditation is merely a commercial practice and any institution can pay to obtain accredited status from international agencies. Saudi academics, on the other hand, assert that international accreditation systems are more flexible and their standards are less complex, while the process of national accreditation creates anxiety among academics (Alrebish et al., 2017).

It depends on the type of accreditation. Some of them, as we all know, are commercial and I believe that they do not have any value. **Dr. Mazin**

International accreditation to me is worthless ... Honestly, it is completely commercial to me. **Dr. Hasan**

On the other hand, Dr. Hasan values national accreditation over international accreditation, despite the fact that Saudi academics have criticized the NCAAA on account of its alleged unsuitability for medical education (Alrebish et al., 2017). Dr. Hasan believes that national accreditation is more rigid and probably better connected to the culture of Saudi Arabia, in both the HE and health sectors.

National accreditation is established on the values and studies in the same language and speaking the same language means having the same principles and attitudes ... National accreditation seeks to benefit the students in the first place. Besides, it eliminates the variations of different

universities and students by having same services. **Dr.**

Hasan

Despite the fact that the majority of employers assert that academic accreditation is a quality attributes of universities, a minority are concerned that universities could abuse accreditation and waste the benefits of going through it. Dr. Sami raises his concerns about some universities that can ‘prove’ their quality on paper only. In this scenario, accreditation is worthless when the official papers do not reflect what is happening in reality. Indeed, for academic accreditation to be a quality attribute, the actual purpose of accreditation must be fulfilled in terms of accomplishing high-quality practices, ensuring stakeholders’ satisfaction, academic enhancements and more, rather than just randomly completing forms and reports.

You can easily get accreditation. But what is important is the alignment of theory and practice. I mean the alignment between what is written on paper and how the institutions perform ... We do not want people to get busy with paperwork and reports while forgetting what is important in terms of training students and delivering high-quality teaching. **Dr. Sami**

In summary, employers confirm that academic accreditation is a quality attribute of universities. However, effort must be dedicated to ensuring that accreditation serves its ultimate goal of complying with and maintaining high-quality practices. Specifically, employers recognize national academic accreditation as a quality attribute, whereas the value of international academic accreditation is debated. Employers openly talked about accreditation when they were asked about the significance of accreditation in HE. Indeed, hospitals also go through accreditation. It is likely that the majority of employers have gone through the accreditation process and formed an idea about this practice based on their own experiences with international and national accreditation. This shaped employers’ perspectives about accreditation and the way they differentiated between international and national accreditation.

To sum up, four categories fall under the theme of university reputation. Given the emerging competition taking place among universities, building a good reputation, locally and beyond, is crucial to demonstrate quality in HE. Generally speaking, prospective students strive to apply to a reputable university, while employers also seek to recruit candidates from

reputable universities. In this theme, employers believe that graduates' performance in the labor market, academic accreditation and world ranking contribute to building the reputation of a university. According to Willis and Taylor (1999), graduates in the labor market contribute to the reputation of the university they graduate from. Likewise, employers in this study perceive graduates' performance in the labor market as having a significant influence on a university's reputation.

According to Udman and Heidmets (2013), prospective students and employers think that a university's reputation is strongly linked to its history and tradition, its international activity, and its position in the world rankings. Similarly, almost half of employers perceive world ranking systems as a key indicator of quality that has a positive impact on a university's reputation. In addition, employers value international collaboration and activities of universities and they regard them as ultimately building a global reputation. Being a globally distinguished university creates optimal benefits for students, faculty members, potential employers, and the entire university. Indeed, employers' views on building an international reputation align with NCAAA quality standards, which aim to attract international students to study at Saudi universities.

Academic accreditation also attracts the interest of employers. Although the accreditation process creates burdens and stresses among workers, it ensures continuous evaluation and consequently sustainable quality improvements. However, one employer expressed doubts about international academic accreditation in particular, believing that national accreditation is more rigorous and serious, contrary to Saudi academics' perceptions of national and international accreditation (Alrebish et al., 2017).

5.5 Chapter Summary

To conclude, this chapter contributes to answering the first research question by analyzing the interview data. The first research question aims to explore how employers conceptualize quality in HE. By adopting deductive thematic analysis and using NVivo 12 software, the researcher was able to group employers' perspectives on the quality of HE into four themes: 1) Administrative Quality; 2) Educational Quality; 3) Scientific Research and Engagement Culture; and 4) University Reputation. Employers agreed on a number of NCAAA standards, such as teaching quality, scientific research, and academic accreditation. However, they did not pay a lot of attention to the university's mission and vision or to financial matters, which are key elements in the NCAAA's standards.

When employers discussed the quality of administrative attributes, their main concerns were closely related to students' experiences at university. This shows that employers' optimal desires from HE revolve around the graduate. They all showed an interest in teaching and medical training as indicators of quality. With regard to medical teaching and training, employers believe that universities need to establish collaboration and work with all stakeholders to ensure optimal learning experiences for the students; this is an indication of high quality. Also, academic accreditation status and a high world ranking contribute to the reputation of a university, which in turn, they believe, will achieve quality in that university.

In the next chapter, Chapter 6, the second part of the interview findings are reported, covering the attributes of medical graduates. This will answer the second research question on how employers conceptualize the quality of medical graduates. The themes that emerged in this chapter and the following helped to develop the questionnaire used in the survey in phase 2 of this study. Subsequently, the objective of this study was achieved and employers' insights into the quality attributes of medical graduates and universities were both merged into a comprehensive quality model in HE.

CHAPTER 6 INTERVIEW FINDINGS 1: MEDICAL GRADUATE QUALITY

6.0 Introduction

After discussing the views of the employers on the essential quality attributes of universities, this theme is dedicated specifically to the quality attributes of medical graduates in Saudi Arabia. The findings of this theme will contribute to answering the second research question.¹

In 2011, the Saudi Medical Deans Committee produced a national competency-based framework to specify competencies for medical graduates, known as the SaudiMeds Framework. Despite the existence of this framework, this theme demonstrates the key quality attributes of medical graduates from the perspective of employers. As seen in this theme, the employers' views about the essential attributes of medical graduates correlate, to some extent, with this framework.

The SaudiMeds framework consists of seven domains: Doctor and Practice, Doctor and Patient Care, Doctor and the Community, Doctor and Communication Skills, Doctor and Professionalism, Doctor and IT, and Doctor and Research (Zaini et al., 2011). Many other countries, such as Canada, the United States, the United Kingdom, the Netherlands and Australia, have also set out such frameworks to specify the competencies required of medical graduates. Cate and Scheele (2007) believe that these frameworks could close the gap between HE and the labor market. However, the Saudi Meds Framework was developed from the perspective of academics and it is thus essential to expand the scope of this framework to include the voices of employers in terms of specifying the requisite competencies for the labor market.

This chapter shows that employers favor medical graduates with an appropriate balance of theoretical knowledge and practical skills. In addition, the employers asserted the importance of medical graduates attaining strong soft skills. This chapter outlines the soft skills most favored by the employers as quality attributes. Indeed, the employers did not expect that universities would fully prepare graduates for the labor market. Hospitals, on the other hand, are responsible for providing additional preparation programs for newly graduated students in

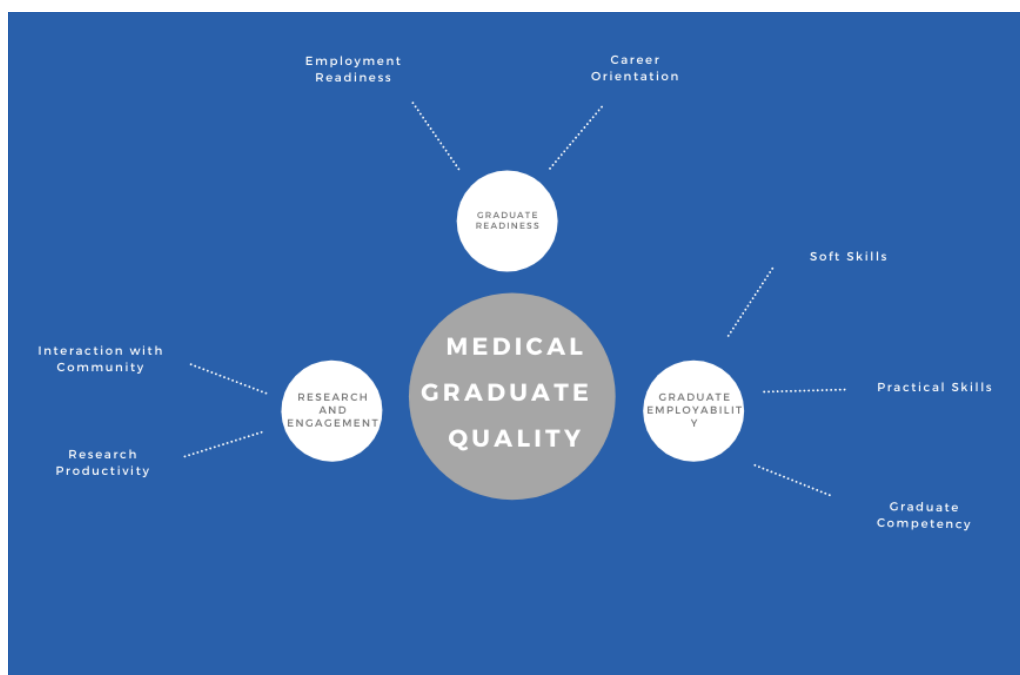
¹ The findings presented in this chapter were published in the Journal of Further and Higher Education in 2022 (DOI: 10.1080/0309877X.2021.2008330).

accordance with the needs of the labor market, from the perspective of employers.

The interview data analysis reveals that employers' perspectives of quality of medical graduates can be grouped into three themes: 1) Graduate Employability, 2) Graduate Readiness, and 3) Research and Engagement Experiences. The thematic analysis generated these three themes comprising seven categories and 17 codes, as shown in Figure 7. These themes, categories and codes are discussed in sections 6.1, 6.2 and 6.3.

Figure 7

Employers' Perspective of Quality Attributes of Medical Graduates: Themes and Categories



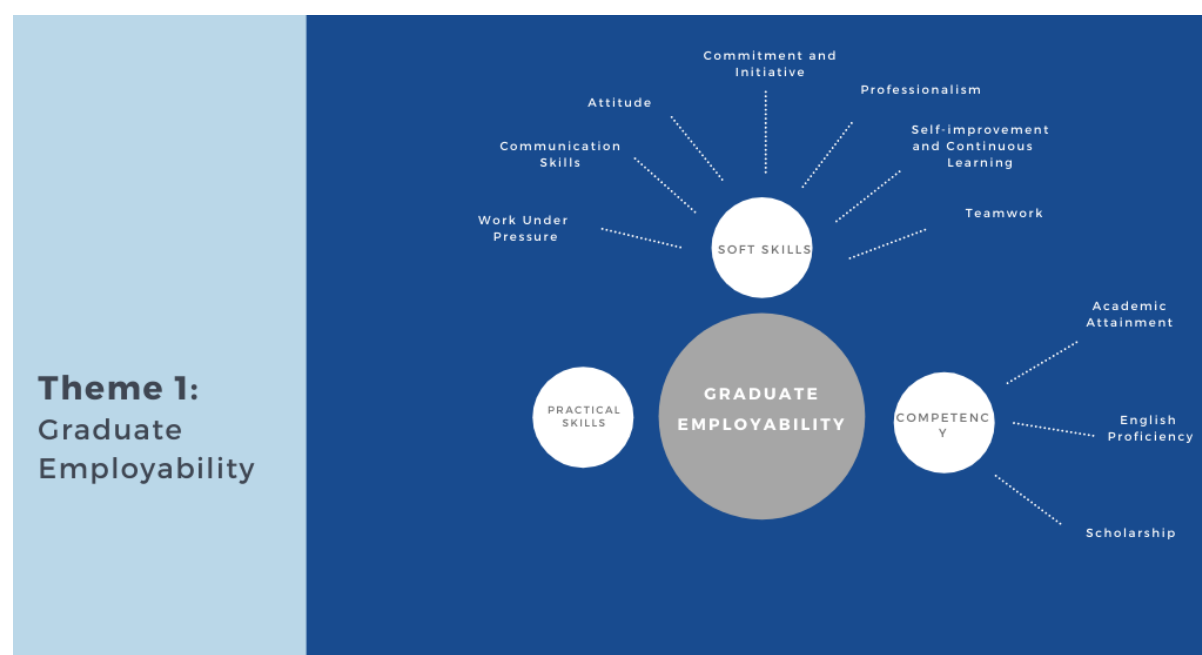
6.1 Theme 1: Graduate Employability

This theme demonstrates employability as a quality attribute of medical graduates. Hillage and Pollard (1998) define graduate employability as ‘the knowledge, skills and attitudes that graduates are expected to be able to demonstrate they have acquired in higher education. Given the continuous debate on the employability skills essential for the labor market, this concept remains unclear in the literature (Griffiths et al., 2018). No single unified set of skills is proposed or agreed upon, due to the varied perspectives of different stakeholders in HE. Numerous efforts have been made worldwide to develop competency frameworks to determine the essential soft skills required in the medical labor market (ACGME, 2001; Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Zaini et al.,

2011). The majority of these frameworks were developed from the perspective of faculty members, as discussed in detail in Chapter 3. Accordingly, this theme demonstrates the attributes that employers perceive as quality indicators in medical graduates in terms of soft skills and competencies. This theme breaks down into three categories and 11 codes, as shown in Figure 8.

Figure 8

Graduate Employability Theme, Categories and Codes.



6.1.1 Soft skills

Employers define graduate quality as the attainment of personal skills and they assert that it is less about academic knowledge and performance and more about candidates' personality and skills (Branine, 2008; Chhinzer & Russo, 2018; Dicker et al., 2019). Dr. Abdulakrim and Dr. Adam prefer medical graduates with excellent soft skills over those with high grades. Developing a solid medical background is clearly vital for any prospective doctor. Indeed, medical graduates can be clinically trained and medical knowledge can be attained and enhanced in the workplace. Soft skills, on the other hand, are more challenging to teach.

Whether their theoretical knowledge is good or not [is less important]; they can learn [them] anytime if they want to. Soft skills are more important for me. **Dr. Mazin**

If their educational competency is quite high but they lack cooperation and understanding, to me that is useless. **Dr. Adam**

However, Dr. Fawaz disagrees with Dr. Mazin and Dr. Adam. He is a pediatrician and thinks that the safety of children and their health is at risk when medical graduates are less competent and knowledgeable. Unlike Dr. Mazin and Dr. Adam, Dr. Fawaz thinks that soft skills can be taught in the labor market, whereas knowledge cannot be attained after graduation. However, whether or not soft skills could be taught in the labor market is debated. In the medical labor market, there is no guarantee that a candidate would be recruited for potentially demonstrating soft skills later.

Theoretical knowledge is very important for the patient's safety. If one does not have sufficient theoretical information, the patient's safety is at risk. As for their personality, we can teach them that. Still there are some things that cannot be taught. **Dr. Fawaz**

6.1.1.1 Teamwork

In the SaudiMeds framework, teamwork is a desired outcome of medical graduates in Saudi Arabia. In this framework, teamwork and communication skills are combined together into one dimension, underlining the links between these two important skills. Additionally, according to the CanMeds framework, medical graduates are expected to be effective team members, and this includes practically working together as well as sharing information, negotiating, and making decisions with colleagues. Similarly, when asking employers about the quality attributes of medical graduates, a number of them believe that high-quality graduates must know how to work with others. For example, Dr. Rayan's first answer to this question was about teamwork.

To work in harmony in the department is important, and to handle load in work. [And] to possess a team spirit. **Dr. Rayan**

Dr. Sayed adds that sometimes there are cases where more than one doctor is involved in a patient's treatment, which is why teamwork is an important skill for graduates to possess.

They [graduates] must be team-workers, as sometimes there are cases that need the help of more than one specialist doctor. Therefore, they might sometimes need their colleagues' help in some cases. **Dr. Sayed**

Indeed, for Dr. Adam, teamwork is more significant than academic attainment as a quality attribute of medical graduates. He specifically talked about situations in surgery where a high degree of cooperation is needed among different healthcare professionals in order to successfully perform surgery. Indeed, this is definitely an important attribute, especially for surgeons, as they handle critical situations and may experience serious and life-threatening moments where a lack of this specific skill could be detrimental:

Applicants [have] to be cooperative and know how to accept and respect teamwork. ... A surgeon cannot perform on his/her own without nurses and assistants. If doctors do not have such a concept of cooperating and think they can perform on their own and do not need to share experiences, then they will cause a lot of trouble and this will not be beneficial at all.

Dr. Adam

6.1.1.2 Self-improvement and continuous learning

Indeed, in medicine, as in many other disciplines, learning and development do not come to an end. Learning is supposed to be a lifelong process. The SaudiMeds framework recognizes lifelong learning as a desired outcome for medical graduates. Additionally, from the perspective of patients, a good doctor is someone who learns from their mistakes (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The employers in this study raised self-development and continuous learning as important attributes of quality of medical graduates. Dr. Hasan opined that medical graduates are lifelong students who are anticipated to study every day throughout their medical careers.

Students should not stop studying and researching just because they have graduated. Doctors are everlasting students, as medicine is improving on a daily basis. **Dr. Hasan**

Dr. Bayan and Dr. Sami agree that although degrees are a quality attribute of medical graduates, they are still not sufficient on their own in the medical labor market. From their point of view, continuous learning and development are important supplementary quality attributes of medical graduates. Tomlinson (2012) argues that graduates must invest in their continuous learning. According to him, earning a degree has recently come to be seen as a minimal requirement and the labor market is demanding more than that.

Doctors must be eager to learn more ... It is not just a matter of being graduated and getting a certificate. The world changes every day, you cannot remain as you are and say that you have studied everything. **Dr. Bayan**

Universities cannot prepare fully competent and qualified graduates, rather focus should be made to make student self-learners. **Dr. Sami**

When Dr. Sami was asked about low performers in hospitals, he replied that self-learning and developing are key attributes that help doctors to keep their job.

If the physician has the initiative to develop and learn I would definitely give him the chance to stay and learn. If the candidate has a good background of knowledge and basic skills with initiative and willingness to learn, I would keep him. But for candidates whose abilities you know are limited and who cannot offer more, do not have the initiative, I would suggest ending the contract and getting a replacement. **Dr. Sami**

Indeed, this is especially the case in medicine, where technological advances, treatments, and medicines are subject to rapid changes worldwide. Diseases change and develop over time, a recent example of which is the COVID-19 pandemic. Thus, learning in medicine is not a point in life but rather a journey. High-quality doctors are expected to continuously seek information about new developments in medicine and to develop their practical skills.

6.1.1.3 Professionalism

The majority of medical graduate competency frameworks in the literature distinguish professionalism as a desired outcome. Professionalism is a broad term that incorporates multiple meanings. The Saudi Meds, CanMeds, and Outcomes for Graduate frameworks assert that medical graduates have to act professionally at work and be able to effectively deal with patients (Frank & Danoff 2007; General Medical Council, 2018; Zaini et al., 2011). According to these frameworks, professionalism is a way of acting professionally by ensuring confidentiality and maintaining ethical behavior and punctuality. A study conducted by Post et al. (2015) among pathology graduates indicates that employers emphasize pathologists' work ethic, professionalism, and interpersonal skills over career motivation, work style, and technical proficiency. Williams (2011) concludes that Australian employers value professional behavior in paramedic graduates. Similarly, this study also proposes

professionalism as a quality attribute from the perspective of employers. Dr. Yousef confirms that practicing medicine ethically is a quality attribute of medical graduates. Dr. Lina adds that concern for ethics and communication skills are vital qualities, indicating the necessity of these two attributes.

I measure his/her quality by whether he/she possesses the outcomes, knowledge, attitudes, skills, information, ethics and skills required from doctors in order to work in organizations. **Dr. Yousef**

The evaluation is based on multiple standards: research, the ability to train or to supervise, the ability to communicate well with your colleagues and patients, punctuality, and ethics. **Dr. Lina**

Professionalism is also accomplished by showing punctuality. Dr. Hasan asserts that this quality attribute is evident from the beginning, before even being offered a job. Showing punctuality at the start, in job interviews, is a quality attribute that graduates could demonstrate at the earliest point. On top of this, punctuality must be practiced with patients. It is important to arrive on time to appointments and to conform so as to allow timing to be scheduled.

During the interview, for example, punctuality is really important. If the interview is at 9 o'clock, and I find the applicant there from 8:45, it gives a good first impression. **Dr. Hasan**

Dr. Hasan asserts that professional behavior in committing to work is a matter of quality. For example, not showing up at work at short notice is surely improper behavior by medical graduates. Dr. Adnan adds that he does not expect high-quality graduates to fake sick leave to secure leave from work. Unfortunately, this matter is quite common in Saudi Arabia, where many medical centers, mostly private ones, offer fake sick leave for money. Quite a number of workers in different disciplines attempt to seek this kind of leave; however, for a healthcare professional working in the medical field, this should not be acceptable.

No-shows are another issue ... One cannot just easily call and say that they are not coming for work. This is unacceptable. **Dr. Hasan**

Punctuality, attitude toward colleagues and patients, and no fake sick leaves. Those are the main soft skills that ER doctors should have. **Dr. Adnan**

6.1.1.4 Commitment to work and initiative

Apart from the soft skills mentioned in competency frameworks in the literature, commitment to work is a new quality attribute emerging in this study. Abdulkarim says that commitment to work, regardless of working hours or salary, should be unflagging. This attribute was raised by employers because they have probably encountered this type of candidate seeking medical jobs. A study by Post et al. (2015) shows that medical employers are frustrated with the tendency of some medical job seekers to look for unrealistic salaries and working hours.

The physician should have the initiative to work regardless of working hours. **Dr. Mazin**

The only important thing is to graduate as a student who is ready to work regardless of the salary and working hours ... Other residents may come exactly on time at 7 p.m., however, they spend the whole shift, from 7 to 4, playing with their mobile phones. **Dr. Hasan**

This code is linked to teamwork, where doctors need to take the initiative to help colleagues when needed. As seen in the teamwork code (see Section 6.1.1.1), there are some cases where doctors need to work together on treatment or consultation. In these cases, doctors must show the initiative to work with others and give more than what is expected. Dr. Bayan asserts that the initiative to assist colleagues underpins the quality of medical graduates.

There must be an initiative to help others, as this field requires you to be helpful ... he/she must be able to take others' places and the same goes for them. **Dr. Bayan**

Dr. Lina adds that high-quality graduates should show commitment to accepting their call duties. Medical graduates should be aware of these 'soft' attributes before entering the medical field. Again, as mentioned in multiple places in this chapter, medicine is more varied than any other discipline, and some doctors' soft skills are indeed key to the lives of patients.

You [as a graduate] find that there are circumstances and the on-call doctor is not there. Therefore, they call you in for an emergency. You are not the on-call doctor, but it is a life or death situation. How would you respond? ... Sometimes, we need each other. The same thing goes for the shifts. You should complete full shifts. It is not something we do for fun. **Dr. Lina**

Showing initiative and commitment to work is a high priority and it can lead to some interference in doctors' lives, more so for some medical specialties such as surgery,

gynecology and others. However, for less critical medical specialties, commitment and initiative could be demonstrated when covering staff shortages, as stated above by Dr. Lina.

6.1.1.5 Communication skills

Communication skills are essential for the work field in general and for the medical labor market specifically. Indeed, a number of frameworks, such as CanMEDS, the Scottish Doctor, SaudiMeds and the Outcome Project of the (US) Accreditation Council for Graduate Medical Education frameworks, have dedicated a separate dimension to communication skills, implying their significance in the medical labor market (ACGME, 2001; Frank & Danoff 2007; Simpson et al., 2002; Zaini et al., 2011). Similarly, the majority of participants in this study cited communication skills as an essential soft skill. Indeed, this skill was the most preferred soft skill among all the participants. There was considerable agreement among all the participants from different specialties that communication skills are required for work in the medical field. For example, Dr. Hasan, who is an ER doctor, Dr. Fawaz, who is a pediatrician, Dr. Sayed who is an Ophthalmologist, and many more doctors raise the issue of communication skills.

Communication skills, personality, and knowing how to deal with people are a priority. Show me that you want to work and learn. **Dr. Hasan**

I would like the surgeon to be quiet, understanding, and have good communication skills with kids and families. Here in pediatric surgery, we have two patients: the family and the child. Therefore, one has to treat the child and his family. One has to explain to both of them at the same time ... one should be careful in dealing with them and should go slowly with them, as this child is precious for them. **Dr. Fawaz**

One thing that really matters, and I must say that it is not paid so much attention, is developing communication skills. I believe that it should be taught from the very first beginning in order for students to know how to interact with patients and even their families. **Dr. Sayed**

Dr. Sami claims that graduates would be ready for the medical work field if they demonstrated effective communication skills. Although doctors' key responsibility is to treat patients, they should practice effective communication skills with people beyond patients, such as the patients' relatives, friends, or family.

His/her personality is very important for us, whoever works in the medical sector, especially when dealing with patients. It is very important to know how to communicate and deal with patients and their families. **Dr. Sami**

A key aspect of the communication skills that medical graduates should possess is how to convey news to patients and/or their families. From the perspective of Dr. Sayed, communication skills are linked to a doctor's reputation. The lack of this type of skill could result in having fewer patients visiting the clinic. It is believed that most medical malpractices are due to miscommunication between doctors and patients (Levinson et al., 1997). Additionally, Ambady et al. (2002) found that doctors who lack effective communication skills are more likely to be sued.

[Graduates] must know how to break bad news to patients ... Some doctors may be really good, but their communication skills are lacking. Such doctors lose patients easily. That is what differs from one doctor and another. **Dr. Sayed**

Patients prefer doctors who listen to them and allow time for them to discuss matters and make decisions about their treatment (Hurwitz & Vass, 2002). Likewise, Dr. Sami opined that the ability to communicate diagnoses to patients underpins quality in HE.

Students should have at least the basics on how to diagnose illness and communicate effectively with patients. This is the most significant university quality. **Dr. Sami**

Dr. Lina adds that communication skills are crucial and are not restricted to dealing with patients. This aligns with the dimension of communication skills in the Scottish Doctor framework (Simpson et al., 2002), SaudiMeds (Zaini et al., 2011) and other medical learning outcomes frameworks (e.g., General Medical Council, 2018; Frank & Danoff, 2007). Apart from the soft skills needed for the medical labor market, the Scottish Doctor framework contains a specific domain for communication skills, covering the ability of graduates to communicate with patients and relatives, colleagues, tutors, and the media (Simpson et al., 2002).

The evaluation is based on multiple standards: research, the ability to train or to supervise, the ability to communicate well with your colleagues and patients ... How you deal with others ... This point is important. How you deal with administration, colleagues, and patients. **Dr. Lina**

6.1.1.6 Working under pressure

Some medical specialists experience tense situations more often than others. For example, surgery and emergency specialties are more tense than dermatology and orthopedics specialties in terms of the number of patients and the criticality of the patients' condition. However, all medical graduates, whatever their specialty, are expected to handle work pressure. Some participants raised the skill of working under pressure as a quality attribute of medical graduates. Indeed, Post et al. (2015) also claim that employers seek candidates who demonstrate hard work and flexibility in handling responsibilities. Dr. Rayan is a surgeon and believes that working under pressure is a quality attribute.

To work in harmony in the department is important. And to handle workloads. **Dr. Rayan**

Dr. Adnan concurs on this quality attribute. He is an emergency physician and indeed emergency departments are probably the tensest environments in hospitals, with medical graduates expected to cope with an unpredictable number of patients.

ER doctors work in tense situations ... If they are easily tensed, they will fail ... The one who examines 20 patients in a 24-hour shift is not like the one who only examines four patients. **Dr. Adnan**

He added that when the workload is high, confidence is important for making good decisions. He claimed that confidence is a quality attribute of medical graduates. Medicine is a tense and critical discipline where doctors often face serious situations that require immediate action. However, these situations could be linked to certain medical specializations. Medical graduates should also be confident about communicating diagnoses and discussing treatment plans and options with patients. Indeed, graduates with high levels of self-confidence are most likely to be recruited (Makki et al., 2015).

ER doctors work in tense situations ... ER doctors must be fully confident, and must know how to deal with all cases. Confusion and lack of confidence may cost a patient his or her life. There is no place for trial and error. **Dr. Adnan**

Moreover, Dr. Mazin, a gynecologist, opined that high-quality medical graduates should be able to handle a high number of patients visiting the clinic. There are some days that are busy and many patients seek health care, while on other days the clinic may be unusually quiet. High-quality medical graduates must be able to handle both types of days.

[Graduates must be able to] work under pressure and be able to deal with busy days where we get a high number of patients. **Dr. Mazin**

Can you work under stress? How would you handle stressful situations? What would you do if there were a shortage of practitioners in the hospital? Would you start complaining? The trainee should not complain about it as we all are working together as a team in this department. We should seek perfection, for the sake of the patient. This is always our core [and we] base our selection criteria on it. **Dr. Lina**

6.1.1.7 Attitude

Attitude was raised by some participants as a quality attribute of medical graduates. This skill is broad and could be demonstrated in a variety of situations in hospitals, such as when dealing with patients, colleagues, management, and more. A study in Australia showed that paramedic employers value personal behavior and attitude in fresh graduates (Williams, 2011). Similarly, the Scottish Doctor framework lists attitude as a desired outcome for medical graduates in Scotland (Simpson et al., 2002). Dr. Yousef concurs with this:

I measure his/her quality by whether he/she possesses the outcomes, knowledge, attitudes, skills, information, ethics and skills required from doctors in order to work in organizations. **Dr. Yousef**

Dr. Hasan agrees that attitude is a quality attribute and described the type of attitude that is desirable in medical graduates.

Suppose you were standing in the rain waiting for a taxicab, and then a moving car splashed some water over you. What would you do? Would you yell at the driver and throw some stones on his car? This is not a very bright solution ... It is better to get back home, change clothes, and get back to work. That is the more logical solution. Such small differences tell you a lot about the personalities and attitudes of nurses. **Dr. Hasan**

Dr. Hasan and Dr. Adnan are emergency physicians, and as is generally known, emergency departments are very critical and tense environments where it is crucial to show a positive

attitude. They both think that medical graduates should have the requisite attitude to deal with different types of patients. Indeed, especially in critical situations such as those encountered in emergency departments, patients or their families could arrive distressed or in pain, and in turn physicians must display a positive attitude to provide initial relief to their distress.

How they deal with patients is a priority as well. Here, in the ER, everybody is always in such a rush. Some doctors may directly get mad when a patient yells at them. Doctors must know how to deal with a furious patient, as no matter what a patient does ..., he remains our responsibility. **Dr. Hasan**

We might have some violent patients coming to us ... If doctors are violent as well, it would be a disaster. **Dr. Adnan**

Dr. Fawaz, a pediatrician, also thinks that attitude is a matter of quality. From the point view of a pediatric, attitude is necessary to deal with frustrated parents and families who are worried about their child's life.

Sometimes, parents do not want us to operate on their child, as they think that there might be a risk ... They might even start yelling at us ... as they are trying to protect their child. That is why we must be able to understand the difficulties in those situations, as we are usually closely involved with families.

Dr. Fawaz

Dr. Bayan shows how important attitude is for medical graduates. She contended that a lack of attitude could negatively impact the reputation of the physician and consequently that of the hospital and vice versa.

The grades do not concern me as much as the attitude ... If a student has perfect knowledge but lacks the right attitude, no patients will come to him or her. This might affect the reputation of the hospital he/she is working in ... If one deals with a patient nicely, he will give positive feedback about the doctor and the hospital as a whole. **Dr. Bayan**

In sum, there is considerable agreement between the participants on the soft skills that are needed in the labor market, a finding that correlates with the skills emerging from the

literature. A graduate cannot be successful in the medical field without these soft skills. From the perspective of employers, the most favored soft skills that are helpful in the medical workplace are the following: ability to work under pressure, teamwork, a desire for self-improvement and continuous learning, punctuality, communication skills, attitude, commitment to work, and initiative. The lists of soft skills in the available frameworks in the literature mostly align with the findings of this study. The employers' perspective, in terms of medical soft skills, i.e., teamwork, self-improvement and continuous learning, professionalism, communication skills, and attitude, strongly aligns with the SaudiMeds Framework, which was constructed by medical academics. Besides these skills, employers in this study added commitment to work, initiative, and working under pressure as essential soft skills for the medical labor market.

6.1.2 Practical skills

Medicine is different from any other discipline in the way that practical skills are crucial for medical graduates. A number of studies across the world have shown that medical graduates are not fully prepared for the medical labor market in terms of their practical skill set (Armstrong et al., 2004; Hilmer et al., 2009; Langdale et al., 2003; Scheffer et al., 2010; Windish et al., 2004). Employers believe that medical graduates are not effectively trained in the areas of clinical and practical skills (Matheson & Matheson, 2009).

In this study, the majority of participants confirmed that practical skills are a key quality attribute of medical graduates. This absolutely makes sense, as physicians from a variety of specialties normally utilize their hands and special tools and equipment to perform their job. The perspective of the participants aligns with almost all the competency frameworks for medical graduates, such as CanMEDS, Outcomes for Graduates (formerly Tomorrow's Doctors), the Scottish Doctor, the Outcome Project of the (US) Accreditation Council for Graduate Medical Education, and, the framework most pertinent to this study, the SaudiMeds (ACGME, 2001; Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Zaini et al., 2011). Dr. Reem asserts that the practical skills of medical graduates underpin their quality and in turn the quality of the university. Additionally, when Dr. Adnan was asked about the quality attributes of medical graduates, he simply listed a number of basic practical and clinical skills that graduates must master in order to enter the labor market. It could be concluded from his response that demonstrating practical skills is a key quality attribute of medical graduates.

When graduates are highly competent, knowledgeable and excellent in practical skills, this indicates the quality of the university. The higher quality of the graduate, the higher quality of the university. **Dr. Reem**

If ER specialists are applying here, they must at least know how to do CPR, Intubation, and Central Lines. They must know how to revive patients. **Dr. Adnan**

Generally known, practical skills are more prevalent in certain medical specialties than in others. In other words, practical skills as a quality attribute are more critical in surgery than in dermatology. Dr. Sami, a surgeon, reemphasized Dr. Sayed's point, saying that surgeon graduates who lack surgical skills would not succeed in the medical labor market. This implies that the most vital quality attributes of surgeon graduates are surgical and practical skills.

For practical skills, for example in our surgery department, he/she [graduates] are not recruited if the candidate does not have the surgical skills required. **Dr. Sami**

Dr. Lina, also a surgeon, agrees, saying that practical skills, as a quality attribute, should be demonstrated at a high level. She clearly described how surgeon graduates must possess basic surgical skills. Indeed, this skill is obviously critical for surgeon graduates. Limitations in this skill or even minor mistakes in performing surgery would probably result in undesired outcomes.

Residents [in surgery] must have the surgical skills it takes to perform an operation on a patient We always say that if you do not respect the tissues of the patient's body, they will not respect you. How will they not respect you? Through their reaction! They will start bleeding and you do not want that happening in a surgical operation. **Dr. Lina**

Unlike any other discipline, practical skills are as important as a solid medical background and knowledge in the medical field. As shown in the academic attainment code (see Section 6.1.3.1), medical knowledge is important as a quality attribute of medical graduates, but

practical skills are also crucial for the labor market. This point was raised by Dr. Sami and other participants too.

Knowledge is important. When students study and pass exams with high marks, it is great. But what I need to know is can this person integrate his/her knowledge with his practical skills and personality. **Dr. Sami**

Dr. Sayed and Dr. Mazin add that knowledge as a quality attribute does not suffice in the medical labor market. Indeed, medical graduates must demonstrate strong practical skills to be able to enter the medical labor market.

We [employers] cannot hire an applicant just because he has very high grades ... when they apply in here ... [we interview them] in order to test how they would perform practically. **Dr. Sayed**

He/she understands his specialty and is good at practicing what he studied. We need these both in graduates, for example a graduate that comes with high knowledge, but doesn't know how to practice. This kind of graduate is useless. We need both skills and knowledge. **Dr. Mazin**

Given the rapid changes and enhancements in clinical techniques and equipment, Dr. Sami notes that traditional techniques and equipment are as important as the new technology introduced into medicine. Although employers value graduates who keep up to date with technological advances (AlAamri et al., 2020), traditional techniques should not be overlooked. Technology definitely helps us, but we should not rely solely on it.

Medical students should be trained in the basics skills and how to examine and diagnose, [and] then complement them with the knowledge of the innovative and technical aspects of medicine. There should not be an emphasis on the technological aspect and a neglect of the fundamental basics. **Dr. Sami**

As shown in the interviews, possessing basic medical knowledge and practical skills is a quality attribute of medical graduates, but these two attributes are insufficient alone; they must be integrated with good decision-making skills. According to O'Donnabhain and Friedman (2018), medical graduates must be able to make appropriate decisions about if and when to operate or to set out a treatment plan, as well as being able to avoid setting out

unnecessary surgeries or treatment. Similarly, Dr. Bayan claims that appropriate decision making is a quality attribute of medical graduates.

Although obtaining clinical/practical skills and medical knowledge is key for every medical graduate, they must be able to integrate skills and knowledge in order to make suitable medical decisions. In other words, medical graduates should be able to decide whether a procedure is necessary and beneficial to treat an illness or not (O'Donnabhain & Friedman, 2018).

They must be able to take a decision for the patient if he needs a surgery or an operation. **Dr. Bayan**

Similar to the findings in the soft skills and academic attainment codes (see Sections 6.1.1 and 6.1.3.1), two participants contended that high-quality medical graduates are those who possess knowledge, soft skills, and practical and clinical skills collectively. Dr. Rayan says that he would look at the ability of medical graduates in terms of practical skills, and then assess their medical background. Dr. Sami concurs. However, it is explicitly clear in this code that practical skills are a key quality attribute for medical graduates.

In addition [to soft skills], there are the clinical aspects of doctors and their level. And certificates. So all these aspects together. But for me I first look for the practical skills of doctors. **Dr. Rayan**

The most important aspect is that the university or college prepares students to be employable and qualified to work in the field. I don't mean only theoretically; there should be a balance between the theoretical and practical aspects of the students. From my point of view this is the most important standard to judge the quality of an institution. **Dr. Sami**

Almost all the employers confirm that effective practical skills are a quality attribute of medical graduates. Although employers think that practical skills are one of the quality attributes of medical graduates, they also contend that a solid medical background, soft skills, and practical and clinical skills jointly characterize a high-quality medical graduate. Despite that, employers still believe that fresh graduates are not fully prepared for performing a procedure or surgery independently and that they should be supervised until they are competent and confident enough to handle things by themselves (see Section 6.2.1).

6.1.3 Graduate competency

6.1.3.1 Academic attainment

According to Ilies et al. (2010), employers consider a university to be high quality when it produces highly competent and professional graduates for the labor market. Velasco (2012) asserts that employers attempt to recruit the smartest graduates who have accomplished outstanding academic attainment. Students believe that the harder they work to achieve high grades, the greater their potential of finding a job. This would imply that degrees are at the top of the list of qualifications employers usually seek in a candidate. Similarly, some employers in this study raised academic attainment and grades as indicators of the quality of medical graduates, while other employers believed that soft skills and/or practical skills must rank alongside these skills, and they are jointly considered a quality attribute. Academic attainment in this code is the grades and knowledge that students obtained at university. This code demonstrates the views of employers of academic attainment and medical knowledge as quality attributes of medical graduates. For example, Dr. Fawaz asserts that medical knowledge is a quality indicator of medical graduates and that basic knowledge is significant because it underlies the safety of patients.

Theoretical knowledge is very important for the patient's safety. If one does not have sufficient theoretical information, the patient's safety is at risk. **Dr. Fawaz**

To reemphasize the significance of academic attainment and knowledge as a quality attribute, Dr. Bayan discusses job opportunities in Saudi Arabia, opining that, recently, some job vacancies had become available in remote areas and small villages. Unlike big cities, in this situation a fresh graduate might work alone and be the only physician available at the clinic. In this case, the graduates should be knowledgeable enough to handle patients, and sometimes entire clinics, alone and without support.

[This is the case] especially now because there are no vacancies in the big cities like Riyadh and Jeddah. However, there are vacancies in terminal hospitals, where there is no support. The doctor must be scientifically and psychologically ready ... A fresh graduate doctor may become tired if there is nobody to support him/her. **Dr. Bayan**

This is seen in graduate readiness at work (see Section 6.2), where academic attainment and degrees are a starting point for medical graduates. This means that graduates have been

through a number of years studying basic medicine and that this will then continue to develop at the workplace. This aligns with Dr. Rayan's perspective:

When students earn a degree, this does not mean that they are able and equipped to work in the medical sector. It only gives them the basic skills to start work in the medical field. **Dr. Rayan**

Dr. Mazin asserts that a high-quality medical graduate is one who attained high grades in university.

[A high Grade Point Average (GPA)] ensures that the student is smart and has engaged in his studies. I won't recruit a doctor who has a low GPA and grades. **Dr. Mazin**

However, he added that grade attributes alone are not enough to be counted as a quality attribute. Grades, knowledge and practical skills collectively are what make a high-quality medical graduate.

He/she understands his/her specialty and is good at practicing what he/she studied. We need both of these in a graduate ... A graduate that comes with high knowledge but doesn't know how to practice ... is useless. We need both skills and knowledge. **Dr. Mazin**

Indeed, for medical graduates, practical skills and the ability to treat patients are crucial. Generally speaking, some participants heavily emphasized the attainment of a solid medical background and practical skills as a quality attribute of medical graduates. To be attractive to employers, graduates should maintain a balance between the theoretical and the practical. As Dr. Adam noted:

Medicine is a practical field; academic achievement is highly required as well as application and practice. For instance, some surgeons who have high grades [can't] interact with a patient for the first time [because] they don't know how to perform properly with the accurate medical action needed. On the other hand, others, with average grades, ... know how to perform practically in the proper way with patients. **Dr. Adam**

Even for surgeons, where practical skills are seen as a quality attribute, they are incomplete without solid medical knowledge. Dr. Lina, a surgeon in ENT, opined that surgeons cannot

succeed with their practical skills alone, as knowledge is as important as surgical skills. This means that knowledge and academic attainment are quality attributes of graduates for a variety of medical specialties, whether practical skills are minimally used as in psychiatry or maximally used as in surgery.

If you do not know your anatomy, put your knife back in your pocket. Before you are able to work on any part of the body, you must know your anatomy very well. **Dr. Lina**

Dr. Sayed, a surgeon, and Dr. Adnan, an emergency physician, agree that high grades alone are not an indicator of quality in medical graduates. They opined that medical knowledge and grades, along with practical and surgical skills, jointly comprise the quality attributes of medical graduates.

We cannot hire an applicant just because he has very high grades if he has not operated on any patient before. This is why we interview them with consultants and surgeons when they apply here; in order to test how they would perform practically. We cannot hire doctors based [solely] on their grades and certificates. **Dr. Sayed**

Universities that only rely on theoretical education provide knowledgeable students, but they will not be able to work practically. We need practical people. **Dr. Adnan**

On the other hand, although employers showed a higher interest in soft skills, as seen in the previous code, Dicker et al. (2019) argue that they also see earning a degree as a means of acquiring the soft skills necessary for continuous self-learning. Likewise, Dr. Bayan asserts that degrees are insufficient and that graduates are expected to continually learn. Employers seek candidates who demonstrate an ability to continually acquire knowledge and learn throughout their lives (Singh et al., 2013). Although academic attainment is crucial in the medical field, it is seen as a starting point for more learning and development in the labor market.

Of course, to keep building, one must keep on learning. OK, you graduated and have this knowledge ... but you must keep on educating yourself continuously to reach a better position. **Dr.**

Bayan

Dr. Bayan adds that although academic attainment is a quality attribute of medical graduates, knowledge can be improved while working in the workplace. However, soft skills and personal traits are more challenging to attain at work. Therefore, knowledge and soft skills all together are what make a high-quality medical graduate.

Knowledge can be improved through experience ... What is more important is their personal traits. I am not saying that knowledge skills are not important; but personal skills are also important ... If a student has the perfect knowledge but lacks a good attitude, no patients will come to him or her. **Dr. Bayan**

Dr. Lina agrees, saying that a highly knowledgeable medical graduate who lacks proper soft skills is not a high-quality medical graduate.

Knowledge can be collected anytime, but [soft skills] cannot. Say you deal with a patient and he keeps complaining about you. Definitely you will lose your reputation and credibility as a physician. Therefore, I look for both: knowledge and modesty. **Dr. Lina**

On the other hand, Dr. Reem asserts that GPAs are not important as the grades might not reflect the actual knowledge gained while studying medicine. Dr. Adnan agrees with this point of view and claimed that grades are not indicators of performance in the labor market. Likewise, Willis and Taylor (1999) conclude in their study that there is no correlation between grades and performance in the workplace. However, Carr et al. (2014) and Salem et al. (2016) argue that GPA and final examination scores are strongly associated with – and can predict – medical graduates' clinical performance in hospitals. Indeed, high grades do mean that students have studied hard and have done well in exams. However, as Wilson (2001) claimed, standardized written exams usually fail to measure soft skills achievements. Dr Reem agreed this this viewpoint:

High grades do not necessarily indicate good performance. Students might be good at memorizing but bad at practicing what they have learned. **Dr. Reem**

Some applicants might have low grades, but they can function 100% practically ... and vice versa. **Dr. Adnan**

Dr. Adel adds that degrees and academic attainment do not reflect soft skills, contending that grades are not necessarily associated with performance in soft skills. Indeed, studies have shown that universities focus on knowledge and academic attainment and only place a slight emphasis on the acquisition of soft skills (Sin & Neave, 2016; Tomlinson, 2012). The notion of teaching soft skills attainment is debatable. Even though universities work hard to deliver soft skills training/teaching, the level of achievement might vary according to an individual's abilities and characteristics.

There are people who have very high GPAs, but when you try to communicate with them, you find nothing. That is why they call [the degree certificate] a paper. **Dr. Adel**

Indeed, a solid theoretical medical background does not suffice in the workplace. This could apply more to medical specialties where practical skills, such as surgical skills or just simply physical examinations, are a huge part of the job. On the other hand, practical skills in dermatology, for example, are less practiced. Dr. Sami, an orthopedic, notes that the GPA is important as a quality attribute but should be accompanied by good practical skills. In his medical specialty, practical skills are moderately used; however, he asserted that it is important that they complement basic knowledge. Graduates are expected to develop practical skills to succeed in the medical workplace. High-quality medical graduates are those who maintain a balance between the theoretical and the practical (this is also discussed in the practical skills category in Section 6.1.2).

Studying and passing exams with high marks is great, but what I need to know is if he/she is able to integrate his knowledge with his/her practical skills and personality. He/she may be good at memorizing and know how to answer every medical question, but he/she can't practice what he/she knows. So I will go for them all: a high GPA, practical skills and personality. The ability to link these three together [is important]. **Dr. Sami**

Likewise, Dr. Rayan adds that academic attainment should be complemented by an appropriate level of soft skills and practical and clinical skills to make a high-quality medical graduate.

In addition [to soft skills], there is the clinical aspects of doctors and their level. And certificates. So all these aspects together. But for me I first look for the practical aspect of doctors. **Dr. Rayan**

In summary, employers agree that high-quality medical graduates should be knowledgeable and have gained a basic medical background, and that grades and academic attainment do not really indicate knowledge attained. Therefore, it might be concluded that academic attainment, soft skills, and practical and clinical skills are collective quality attributes that are inseparable and indivisible. Thus, while the situation is complex, if Saudi graduates are to be competitive in the labor market, they need to be prepared for the demands of that market. This must include not only a good medical knowledge but also high levels of competence in those soft and practical skills that employers value as quality attributes of medical graduates.

6.1.3.2 English proficiency

Due to globalization in HE, the need for a common language to communicate worldwide has emerged. The concept of globalization in HE was discussed in Chapter 1. However, despite being the global lingua franca, English proficiency is not part of the admission requirements for entry to medical colleges in Saudi Arabia, and therefore a lack of knowledge of English has been seen as a barrier to medical students' attainment, especially in the initial stages of study (Telmesani et al., 2011). Gallagher et al. (2015) report that GCC countries' HE systems produce graduates with low English language competency. In his study, the employer participants were asked to name important competencies that defined a high-quality medical graduate, and proficiency in English was a concern for the majority of employers. In Saudi Arabia, and probably in many other Arab countries, the medium of instruction in medical schools is English. Students learn and study medicine in English. This leaves Dr. Hasan wondering how medical students could eventually graduate with poor English proficiency, despite being exposed to it for more than six years.

Other times you may find another one who does not have any idea about [English]. I wonder how a person like that got anywhere, because medical education is all in English. **Dr. Hasan**

Although medicine is taught in English in Saudi Arabia, Dr. Adel raises the example of the situation in Syria, where medicine is taught in Arabic. However, this medium of instruction in Syria seems to have little or no effect on English language acquisition as Syrian medical graduates still possess a good level of English proficiency.

Syrians, for example, they study medicine in Arabic. When you start talking with them, you find out that they are good. **Dr. Adel**

English is also used in Saudi hospitals for communication. Dr. Adam thinks that this is necessary in Saudi Arabia to be able to deal with non-Arabic native speakers.

At least they have to be familiar with it on a certain level. They do not have to be 100% perfectly fluent, but they have to know how to use and understand it. As they are going to have to deal with non-Arabic speakers every now and then so, they have to be prepared. **Dr. Adam**

In Saudi Arabia, it is believed that English language competency could possibly enhance recruitment opportunities (Randheer, 2015). Indeed, Dr. Adel posited that English language is one of the essential requirements that employers seek in new job candidates.

He would say to me that he does not know how to speak English ... I would not pick him. Only if he was good and spoke [English] fluently. **Dr. Adel**

In summary, the English language is used to teach medicine in universities across Saudi Arabia. Moreover, employers distinguish English proficiency as a quality attribute of medical graduates. However, this does not mean that graduates must be fluent in English, but rather that they should be able to effectively communicate with non-Arabic speakers.

6.1.3.3 IT skills

According to Laidlaw, Guild and Struthers (2009), IT skills are considered to be of least importance for the medical workplace. However, medical workplace requirements have probably changed to favor computer literacy with the emergence of robotic and automated procedures, as well as distance medicine. According to Lauder and Mayhew (2020), the fourth industrial revolution has created a demand for graduates with strong technical skills, and low competency in these skills is therefore likely to negatively impact employment opportunities. In Oman, employers believe that graduates must keep abreast of the latest technological advances emerging in the labor market (AlAmri et al., 2020). Indeed, the SaudiMeds framework specifies computer literacy as a desired outcome for medical graduates (Zaini et al., 2011).

In contrast, in this study, some employers perceive computer literacy and a technological

background as attributes of high-quality medical graduates. These will allow them to effectively practice medicine using innovative and technological techniques. Technology literacy includes the ability to deal with innovative robotic techniques. In this regard, Dr. Rayan and Dr. Faisal view the development of medical students in the use of technology as a quality attribute of HEIs. It is expected that medical graduates will have been trained on and be able to demonstrate the ability to use technology in the treatment of patients. According to Donnabhain and Friedman (2018, pp. 880), physicians should keep track of the latest robotic advances such as “minimally invasive surgery, robot-guided procedures and deployment of prosthetic heart valves”.

I see [robotic surgery] as a promising opportunity that will grow in the future ... Distance education and robotic surgery, endoscopy, minimal access surgery open opportunities and will eliminate the traditional surgeries. **Dr. Rayan**

[Graduates must be trained in] recent technologies used [so as to be able] to interact with current needs and technologies. **Dr.**

Faisal

Apart from robotic and technological advances in medicine, Dr. Adel contend that the ability to handle electronic records and data is a quality attribute of graduates. The SaudiMeds Framework sees computer literacy as the ability to manage patients records and medical informatics (Zaini et al., 2011). Similarly, the Scottish Doctor Learning Outcomes stipulate that medical graduates should obtain general IT skills and be able to handle medical informatics, such as maintaining electronic patient records and dealing with computer-based data (Simpson et al., 2002).

You know everything is now being electronically filed ... He/she must know how electronic medical records work. He/she must know how to deal with software programs like Excel and PowerPoint. **Dr. Adel**

However, traditional practical skills are also important. Students should be taught to practice medicine with an emphasis on using their hands, complemented with technological techniques. The former is essential to prevent the traditional physical examination techniques from vanishing, but Dr. Sami notices that students are weak in this practice. This could lead to problems with ordering unnecessary, and sometimes harmful, tests and x-rays:

The medical sector has developed in terms of technology and type of x-rays involved. So, this technology has been used heavily by physicians and [they have] forgotten how to perform the traditional examination ... For example, if a physician is conducting a surgery using a robot, and the robotic system just goes down or lags. Physicians must have the skills to take over the surgery and complete it ... Medical students should be trained in the basic skills and how to traditionally examine and diagnose. This should be complemented with knowledge of the innovative and technical sides of medicine. There should not be an emphasis on the technological part at the cost of the basic and fundamental skills required ... [Students] are unable to traditionally examine patients because they were trained in the easy way by relying on different types of x-ray. **Dr. Sami**

To sum up, employers agreed that IT skills, including robotic and technological advances in medicine as well as electronic patient records, are quality attributes of medical graduates. However, traditional and basic examination skills should not be neglected in medical education and students must be trained to master both advanced and traditional medical practices. This re-emphasizes the next code on the importance of practical skills in medical graduates.

6.1.3.4 Scholarships

According to AlShahrani et al. (2015), medical students express more of an interest in undertaking clinical training locally, in Saudi Arabia, than they do abroad. However, employers are keen to recruit candidates with a local context who also have international experience (Brown et al., 2007). Likewise, in this study, some employers held that studying abroad is beneficial for medical graduates. Scholarship opportunities could possibly be a great chance to bring overseas experiences to Saudi Arabia and ultimately teach and train students. According to Crossman and Clarke (2010, p. 607), the benefits of international experience for graduates are “experiential learning, additional language acquisition, and finally the development of soft skills”. Dr. Adam and Dr. Sayed strongly support the sending of students abroad on scholarship programs. Indeed, international scholarships are common in Saudi Arabia, and students are normally sent to pursue their studies/training in technologically advanced countries such as the UK, USA, Canada and Germany. Apart from

the numerous advantages of scholarship, Dr. Adam and Dr. Sayed contend that it could be an opportunity to bring international experience into Saudi Arabia:

Scholarships should be granted to students because when they get back, they will teach others and benefit the university and the society. **Dr. Sayed**

I would like there to be a possibility to allow unique students to travel abroad to gain experience, granted that they will teach others when they return. That would be really good ... One thing that bothers me is that private hospitals always hire foreign doctors and only a few Saudi doctors. However, through international medical conferences and scholarships, such problems will be eliminated over time. **Dr. Adam**

As part of international experience, Dr. Fawaz suggests starting a new inter-university program in Saudi Arabia. This program would be mutually beneficial for both the students involved in an exchange. It would allow students to develop different insights and expose them to different perspectives. Consequently, students would be empowered with multiple experiences, local and international. Indeed, the NCAAA has recently added the practice of inviting international students to study in Saudi Arabia in order to encourage universities to establish exchange programs with worldwide universities (NCAAA, 2018).

We lack something [in Saudi Arabia] nowadays. It is called inter-university programs. We should not leave students stuck with their university while they can benefit from some other rotations and materials in other universities. **Dr. Fawaz**

In summary, this theme highlights academic attainment, soft skills, and practical skills as the quality attributes of medical graduates from the perspective of employers. Moreover, the opportunity for medical students to gain international experience through scholarship programs is seen as a desired attribute that characterizes high-quality medical graduates. Indeed, Lauder and Mayhew (2020) believe that merely acquiring soft skills is insufficient. Graduates should attain soft skills, practical skills and theoretical knowledge. Physicians need to be capable of making decisions about the need for a procedure and they should have the required practical skills and knowledge to deliver an effective and successful procedure, if necessary. Similar findings emerged in this study.

In contrast to the existing literature, medical employers in Saudi Arabia favor soft skills over a strong medical background. Counter to the findings of Velasco (2012), the employers in this study tend to recruit graduates for their soft skills, practical skills and academic competencies. Theoretical knowledge can be developed through training and practice, whereas the personalities of medical candidates are quite difficult to alter in the workplace. It can be concluded that hospitals attempt to recruit graduates who are able to effectively deal with patients and work in harmony, demonstrate medical knowledge, and possess practical skills.

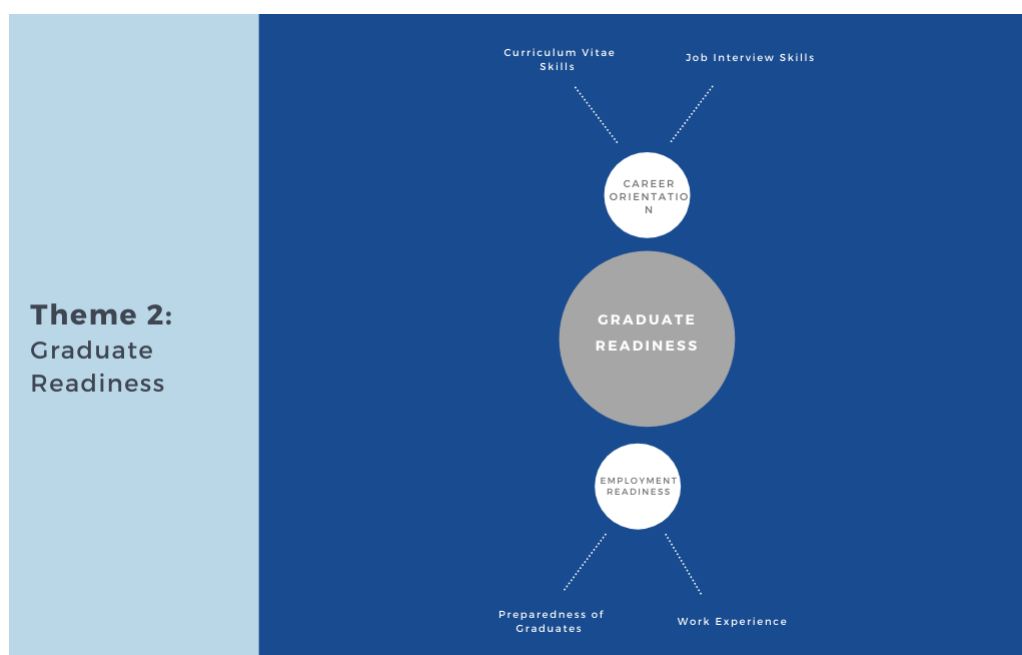
6.2 Theme 2: Graduate Readiness

It could be argued that although employers strive to recruit fully equipped graduates, universities are in fact unable to produce graduates who are fully prepared for the medical workplace. Indeed, universities are not expected to do this and might fail if they attempted to do so. The role of universities is to equip medical graduates with an acceptable level of knowledge, and soft and practical skills. Hospitals then provide additional training in accordance with the needs of the labor market.

This theme shows employers' opinions of the importance of preparedness and readiness as quality attributes of medical graduates. This theme covers the extent to which medical graduates need to be fully prepared for holding a job and what additional training awaits them once they enter the labor market. In this regard, employers raised basic preparedness for work life and being career oriented as quality attributes of medical graduates. This theme breaks down into two categories and four codes, as shown in Figure 9.

Figure 9

Graduate Readiness Theme, Categories and Codes.



6.2.1 *Employment readiness*

A study in 2003 showed that 40% of the UK's medical graduates considered themselves as not being fully prepared for the medical labor market (Goldacre et al., 2010). A number of studies have reported this matter worldwide (Armstrong et al., 2004; Hilmer et al., 2009; Langdale et al., 2003; Scheffer et al., 2010; Windish et al., 2004). Indeed, employers complain that HE systems fail to prepare graduates for the medical labor market (Clarke, 2017; Gallagher et al., 2015; Moreau & Leathwood, 2006; Tomlinson, 2012). In this respect, this subcategory demonstrates the viewpoint of employers over employment readiness as a quality attribute of medical graduates. This category breaks down into two codes: preparedness of graduates and work experience.

6.2.1.1 *Preparedness of graduates*

Although medical graduates perceive themselves as not being fully prepared to work in the medical labor market, a few employers assert that graduates must enter the labor market fully prepared. Dr. Sami held that the quality of universities is acceptable when they successfully prepare medical graduates for the labor market:

The most important aspect is that the university or college prepares students to be employable and qualified to work in the field ... From my point of view, this is the most important standard to judge about the quality of an institution. **Dr. Sami**

Dr. Adel adds to this point by doubting the ability of universities to ensure the full preparedness of medical graduates.

You cannot expect a perfect student graduating from a university.
Nobody could do that. Not in any university around the world.

Dr. Adel

However, Dr. Sami acknowledges that preparing graduates for the medical labor market as a quality attribute means merely equipping them to be flexible self-learners. Indeed, these powerful soft skills will help students to adapt to any situation, especially as medicine is a rapidly changing discipline in which learning never ceases.

Universities cannot prepare fully competent and qualified graduates, so the focus should rather be on making students into independent learners. **Dr. Sami**

To reemphasize this point, Dr. Rayan contend that medical degrees are simply proof that graduates have acquired basic medical knowledge and skills. Degrees could be seen as a starting point for medical graduates. Even though medical graduates go through learning, training and internship experiences, they are likely to receive additional training in the workplace to make them prepared for being a doctor. Indeed, Post et al. (2015, p. 4) assert that recruitment is perceived as challenging because of “inadequate training/experience” and a “mismatch between residency training and job requirements.” This misalignment has probably created a need for additional training and orientation in the workplace.

When students earn their degree, this does not mean that they are able and equipped to work ... It only gives them the basic skills to start work. **Dr. Rayan**

Similarly, since every hospital has its own system, the notion of recruiting a fully prepared graduate is questionable. Dr. Mazin asserts that he expects employers to offer graduates additional training in accordance with the particular hospital system they will be dealing with:

I would recruit candidates and train them based on what we need and how we perform in our organization. I want someone who has the basic knowledge and we will start from this point and develop the candidate to fit our organization. **Dr. Mazin**

Despite the fact that employers claimed that all newly hired doctors are entitled to training programs prior to their official appointment, employers also require candidates who have quite lengthy work experience, as seen in the next code, whereas debate over graduate readiness for the medical workplace continues. This debate remains open with regard to what extent a medical graduate should be prepared for the workplace. It could be concluded that basic preparedness for the labor market is a quality attribute of medical graduates.

6.2.1.2 Work experience

Although Dicker et al. (2019) found that employers look for personal skills in graduates rather than work experience, a number of them think the contrary. There is concern among employers over the work experience (or lack of it) possessed by new graduates. Dr. Sayed, a surgeon, and Dr. Adam, who is not a surgeon, assert that candidates with no practical experience could still be recruited in hospitals. On the same topic, a study by the Australian Industry Group (2009) revealed that organizations usually seek to recruit experienced employees rather than recent graduates. For Dr. Sayed and Dr. Adam:

We cannot hire an applicant just because he has very high grades, while he has not operated on any patient before. **Dr. Sayed**

Medicine is different from any other field because it's mainly practical. Therefore, when graduates come to apply, the first thing we look for is their CVs and their experience. **Dr. Adam**

This definitely makes sense, especially in the medical field, where patients' lives matter; however, the problem is how freshly graduated surgeons can gain experience if hospitals refuse to recruit them. Dr. Mazin suggests that volunteering opportunities could be a substitute for work experience and that consequently graduates would have more opportunities to find a job:

Even though he could not find a job, he could work or volunteer in any chance until he finds a good opportunity. At least he could get some experience. **Dr. Mazin**

The previous points were raised by doctors working in private hospitals, where the situation with regard to recruiting new physicians is different. Dr. Fawaz notes that graduate preparedness is a matter of quality; nonetheless, additional training is available in hospitals, especially for surgical specialties. As Dr. Fawaz noted:

Some of them may not be ready and need more learning and preparation before they enter the practical working life ... Graduated surgeons here cannot perform surgery on their own right away after graduating because they have not practiced it before ... Hence, it is all about whether the university or the hospital they come from encourages them to perform practically or not. **Dr. Fawaz**

Some participants require new candidates to have medical work experience. This makes it even more important that graduates are equipped to compete in a highly competitive labor market. Other participants claim the contrary. Indeed, the situation of work experience in the medical discipline is quite different. Medical training and internship are core aspects of medical education and could substitute for work experience.

Medical employers do not necessarily look for work experience when recruiting candidates. Medical graduates can gain work experience through intensive training/internships. A number of employers claim that opportunities for training/internships can substitute for work experience in medical students. Dr. Adel and Dr. Rayan contend that internship and training could help students gain experience. Even though the gained experience is minimal, students could use it to develop and improve their basic knowledge and practice.

Nobody reaches 100% at college. That is where the internship year comes in handy. **Dr. Adel**

After graduation, students already go through an internship that lasts months ... We start with interns at level zero; students usually have the scientific background; however, clinical skills are limited and we have to train them from A to Z. **Dr. Rayan**

According to Wall, Bolshaw and Carolan (2006), medical graduates are not fully prepared to prescribe medicine and treatment or to make decisions. Indeed, in Australia, one study has shown that the mortality rate in hospitals peaks in August, when medical students start their first year of medical training, due to their lack of experience (Jen et al., 2009). Likewise, Dr. Adnan asserts that work experience is reflected in better performance at work. This reinforces the significance of work experience as a quality attribute of medical graduates.

We have here ER consultants who have very high grades. On the other hand, we have other ER doctors who work much better

because they have 15 years of experience in this field. That is why experience makes a huge difference in the medical field. **Dr.**

Adnan

Although employers acknowledge that preparing a fully ready medical graduate is problematic, the workplace still looks for candidates who are confident in dealing with patients. In this regard, medical graduates should not earn their degree until they are competent enough to assume full responsibility for patients. Quite a large number of job opportunities are available in remote areas where no support is offered for newly hired graduates. In these circumstances, Dr. Bayan notes that universities are expected to train and empower medical graduates to hold full responsibility for patients:

A newly graduated doctor must be ready as he/she might be hired in a place and find him/herself the only doctor in that place.

He/she must be able to take the responsibility for a patient ... It is not just about being theoretically okay; they should be practically ready as well. **Dr. Bayan**

Dr. Bayan adds that preparedness also means that graduates are psychologically prepared for the medical field. Indeed, medicine is not like any other discipline, as preparedness is quite challenging and requires additional effort. This unique field is replete with tensions, pressures and stresses that together probably make the approach to preparedness also unique.

Being psychologically ready is much more important though. The freshly graduated doctor may get tired if there is nobody to support him/her. He/she may be psychologically damaged. That is why it is better to be ready psychologically. **Dr. Bayan**

Dr. Lina adds that even though medical graduates must be fully prepared and ready to assume full responsibility for patients, some hospitals still appoint a consultant to a newly graduate as a supervisor to observe the graduate's performance. Dr. Lina works in a public hospital and this situation could probably happen only in public hospitals, where consultants are already training students. Even here, generalization of the situation is quite problematic as it could vary between private hospitals.

I must spot [the resident's] weak points and improve them ... We make them feel as if they are part of the team. If a resident who is preparing his postgraduate studies comes to me, I attach him to a

consultant doctor so that he could learn from him ... The patient is still the doctor's responsibility. **Dr. Lina**

The data set in this code demonstrates a varied perspective on medical graduates' readiness for the labor market. In fact, a few participants strongly perceive that graduates' readiness for the marketplace is the universities' responsibility, whereas nearly half claim that graduates should go through additional training in the labor market. It could be said that preparedness is actually an indicator of medical graduates' quality, but that the level of preparedness differs.

6.2.2 Career orientation

Apart from acquiring a high level of soft skills, knowledge, and practical skills, curriculum vitae (CV) writing and interview skills are also skills that need to be attained for the workplace. These skills indeed comprise the gateway to the labor market, which is probably why they are so critical. From the perspective of employers, career orientation is an indicator of medical graduate quality. This subcategory breaks down into two codes; CV writing and interview skills.

The majority of universities across the world have career orientation programs that prepare graduates for the labor market. In this study, employers raised their views about (CV) writing and job interview skills as quality attributes of medical graduates.

6.2.2.1 Curriculum vitae skills

Cranmer (2006) claims that building an effective CV is an employability skill appreciated by employers. A number of employers in this study claim that writing a good and accurate CV is a quality attribute of medical graduates. The first impression that employers gain of a candidate is from their CV, states Dr. Sami. CVs are a great resource for speaking to employers as they offer a means of conveying a candidate's education, completed courses, variety of skills, work experience and more.

What I usually look for first [in a CV] is whether he is ready to work in the hospital and hold responsibilities. **Dr. Sami**

For that, it is crucial to put effort into composing a detailed CV. Dr. Adam agrees that a CV is a good source of information about a candidate's work experience. Dr. Lina, a surgeon, contend that a CV gives an initial quality indication that a candidate has the potential to be a good surgeon in the sense that it shows the candidate's surgical experience:

When graduates come to apply, the first thing we look for is their CVs and their experience. **Dr. Adam**

We check their CVs as it is possible to show that one has performed many surgeries, so I make sure of that by asking questions about the surgery itself, such as, for example, how exactly did he/she do it, how he/she anesthetized the patient, or what the possible complications were? **Dr. Lina**

Although Dr. Sami asserts that CVs are an indication of quality, medical graduates must be trained to write an effective yet truthful CV. Indeed, negative attributes/characteristics are not included in CVs, but at least true positive attributes and strengths should be added. As he put it:

We face a lot of surprises with CVs, in the sense that they do not relate to reality at all. CVs only reflect one's experience and give a small description of the candidate. They do not indicate the level of practical skills ... Some come with great CVs and they are actually great in practice ... We are used to the fact that CVs usually do not reflect the reality of the candidate. **Dr. Sami**

Although having an impressive or full CV is a quality attribute of medical graduates, a number of participants agree that CVs do not sometimes reflect the reality of the candidate. Dr. Fawaz opined that candidates are reluctant to state that they lack specific soft skills in their CVs, and this is probably why employers doubt the effectiveness of CVs as a quality attribute:

They will not be able to write down in the CV that they are easily irritated. However, we find it out ourselves once they start working with us. Then we have to deal with it. **Dr. Fawaz**

Dr. Yousef agrees that CVs are basic quality indicators of medical graduates, but he added that job interviews are more meaningful for making recruitment decisions:

Some people tend to write very good CVs while in reality they do not possess something special or good ... If somebody came to me with very good grades and I started asking him questions [that he is unable to answer], I instantly wonder where he got those

grades. How can you judge him then ...: by his grades or by the interview? Both should go together. **Dr. Yousef**

Therefore, it could be said that CVs are a quality indication of medical graduates as they show how qualified the candidate is to fill vacancies, but they should be accompanied by job interview skills, as seen in the next code.

6.2.2.2 Job interview skills

In general, the suitability of a candidate for a specific job is evaluated at the interview (Velasco, 2012). This is why job interviews are important as they are used to make key recruitment decisions. Good job interview skills are a quality attribute of medical graduates from the perspective of a few employers.

Job interviews, along with CVs, help employers to evaluate the level of knowledge that the candidate possesses as well as his/her fit to the organization. Universities are responsible for empowering students with the skill of dealing with and subsequently passing job interviews successfully. From the perspective of Dr. Adam, job interview skills are a quality indication as they show whether or not a candidate is of a high quality and is qualified to fill the vacancy. Dr. Hasan emphasizes that graduates must be able to answer job interview questions to prove their level of medical knowledge:

We ask them what they would do in a hypothetical medical situation. For example, what they would do when they have a patient who has had a heart attack. Through their answers and the sequence order of their thoughts, we can then predict whether they are qualified or not. **Dr. Adam**

There are also some simple questions during the interview. We may ask applicants about the location of certain organs in the human body. Some applicants might not know the answer ...

They should know how to answer such questions. **Dr. Hasan**

In addition, Dr. Lina asserts that job interview skills are a critical quality attribute due to their effectiveness in identifying soft skills. In this way, candidates are either recruited or rejected based on how they perform in an interview. Dr. Sami agrees with this point and stated that job interviews provide evidence as to whether a candidate is a fit for the hospital:

During the interview, we ask personal questions. Some trainees are not accepted because of their personality. **Dr. Lina**

I cannot judge him/her 100% through interviews. But I am able to assess whether he/she will fit the organization. Then I may give him/her the chance to be recruited and show us his/her abilities in the first 3 months [probation period]. **Dr. Sami**

From the point of view of a surgeon, Dr. Rayan claims that job interviews are an indication of a candidate's quality. He said that practical skills could be initially evaluated in job interviews to determine a candidate's suitability for the vacancy:

Asking them [in interviews] what they have done, what stitches they have used [makes it] very easy to know about his/her practical skills ... "Have you done a caesarian before and if so how?" You can know who is faking and who is not, and who is good or bad. **Dr. Rayan**

In Saudi Arabia, most jobs in the private sector in any field come with an obligatory probation period of three months for newly joining employees. Beside CVs and job interviews, this period allows employers to further evaluate the abilities of new employees joining the organization. Within these three months, employers have the right to terminate the contract of new employees who fail to perform to a sufficient standard.

In summary, this theme suggests that the medical labor market seeks to recruit high-quality medical graduates who are confident and independent doctors and who are able to handle all the expected responsibilities in their job. Employers do not think that universities are responsible for preparing medical graduates to be clinically proficient. Instead, it is essential for universities to ensure that graduates are equipped with the basic skills that allow them to enter the labor market. This basic preparedness is a quality attribute of medical graduates from the perspective of employers. In addition, in order to prepare graduates for the labor market, students must be career oriented to demonstrate quality. Employers believe that high-quality medical graduates possess CV writing and job interview skills.

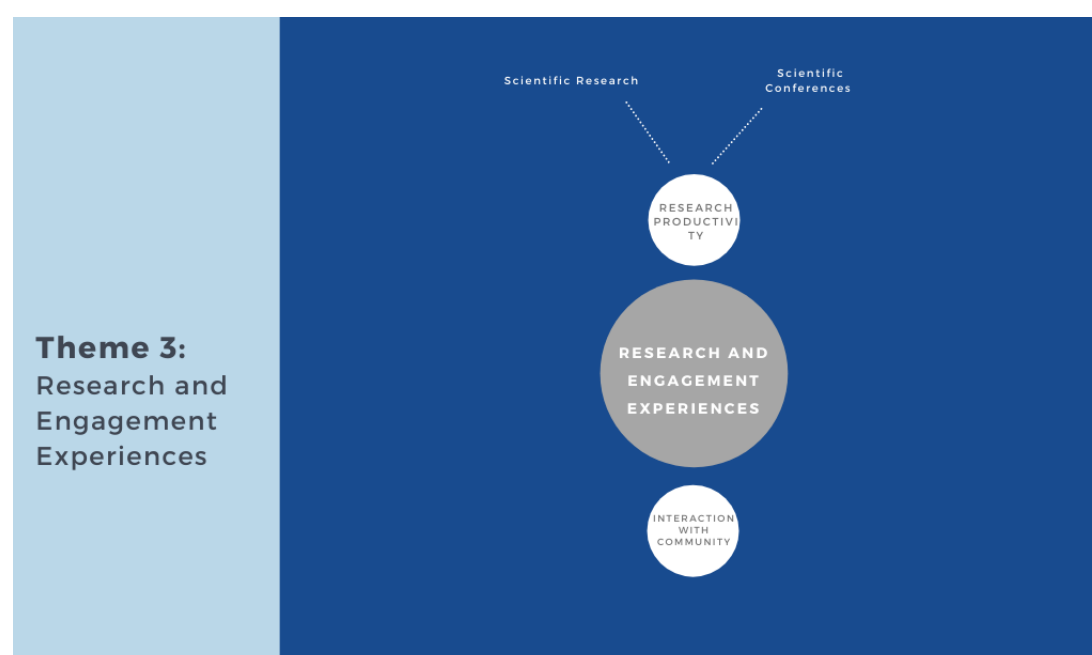
6.3 Theme 3: Research and Engagement Experience

The SaudiMed framework, similar to the Scottish Doctor Learning Outcomes and other frameworks across the world, endorses and values the research skills of medical graduates. Employers believe that students should acquire self-learning skills and learn through research

and community service to demonstrate high quality. They believe that graduates with high research skills and experiences in community service have higher chances of being recruited, as discussed by AlAmri et al. (2020). This theme discusses the significance of scientific research and getting involved in the community as quality indicators of medical graduates. The theme breaks down into two categories and two codes, as shown in Figure 10.

Figure 10

Research and Engagement Experiences Theme, Categories and Codes.



6.3.1 Research productivity

Besides treating patients, some doctors in hospitals get involved in research and/or conferences. As will be seen later in this theme, the involvement in research and conferences provides opportunities for continuous learning from the perspective of employers. Indeed, the CanMEDS 2005, Scottish Doctor and SaudiMeds frameworks have incorporated scientific research skills as an essential outcome for medical graduates entering the medical labor market. This subtheme discusses medical employers' views of the impact of effective research and involvement in scientific conferences on students' productivity in order to show how important these aspects are when it comes to preparing graduates for the labor market.

6.3.1.1 Scientific research

According to the SaudiMeds framework, one of the major attributes of medical graduates is the ability to conduct medical research effectively (Zaini et al., 2011). A number of participants expressed their interest in graduates possessing research skills. In the interviews,

the participants discussed the advantages of research skills and why they are considered a quality indicator of medical graduates. They claim that research productivity contributes to the development of soft skills. Dr. Sami and Dr. Mazin opined that research productivity helps students to gain self- and continuous learning skills:

Students in universities should be encouraged to search for information and learn how to look for it rather than be spoon-fed with knowledge. **Dr. Sami**

Reading scientific papers is a skill and knowing this skill from the first is a very good base for a medical student's career [as it] gives them the ability to continue exploring updates in medicine. **Dr. Mazin**

Dr. Fawaz is also interested in research skills as a quality indicator. He specifically mentioned pediatric research studies, his own medical specialty. This could imply that students should be trained and involved in research studies within their area of specialty.

I would really be attracted to an applicant ... who has participated in pediatric surgery research papers. **Dr. Fawaz**

The majority of the participants contended that research skills are important qualities for medical students to possess. At the same time, two participants, Dr. Yousef and Dr. Lina, express no interest in research skills. Dr. Yousef works in a private hospital and the perspective of the private sector on this matter is apparently distinctive. He held that research skills are useless in hospitals as doctors are here only to treat patients. Indeed, most private hospitals are profit-seeking centers and rarely focus on research or even have research centers.

As an employer, it does not attract me at all. I do not want someone who is dedicated to research, but a surgeon who is able to perform appendix surgery. He would be useful in the hospital. But, if he is applying to a university, I would definitely want him to have been involved in research. **Dr.**

Yousef

For her part, Dr. Lina, who works in a public hospital that has a huge research center attached to it, claims that research skills by themselves are not enough for surgeons, as their practical and psychomotor skills, such as how proficiently they can use their hands in surgeries, are

more powerful attributes that medical graduates should possess. Therefore, it cannot be said that underestimating graduates' research skills is only a private sector viewpoint.

In surgery there must be some basic operations that can be performed by the trainee. That is necessary for me, as a hospital, to hire you as a consultant. I cannot just look into your research papers and that is it. The trainee must have the surgical skills needed to perform operations. **Dr. Lina**

Some participants raised their concerns about students conducting research studies in an unethical manner. Students' individual performances are unclear when they work in groups. Dr. Adel perceives this issue when asking students about their research work in job interviews. He asserted that some medical candidates do not know the answers to questions about particular studies that they (claim to) have worked on. Thus, for research skills to be a quality attribute of medical graduates, research studies must be conducted effectively and ethically.

But what is truly happening is that students are lying to us. I examined the trainees that we have here and I found out that the universities asked them to do research papers. Unfortunately, I found many students had just put their names [to the papers] ... and if you asked them about those research papers, they would not know a thing ... I told you that I truly cherish our graduates. The only weak spot is the research papers. **Dr. Adel**

Although Dr. Bayan thinks that students should be trained to conduct research studies, she also believes that asking medical undergraduate students to publish two articles is quite challenging. Indeed, in Saudi Arabia, graduates of medical bachelor programs are required to publish two articles in order to be accepted to some medical specialty programs. Dr. Bayan asserts that publications are quite beyond the abilities of undergraduate students. However, publications could be an appropriate requirement for postgraduate students. Likewise, Dr. Adam agrees that research skills are one of the quality indicators of postgraduate students. These two doctors said:

Specialized doctors in particular are not accepted that often because in order to be accepted a student must have two published articles as well as a good GPA. He/she must also pass the test that

is set by the commission ... I mean how can an undergraduate student have two published articles? It does not make any sense.

Dr. Bayan

As for the postgraduates, if they have proper research papers, they also give positive feedback to their university. **Dr. Adam**

6.3.1.2 Scientific conferences

As part of research productivity, students have the chance to participate in or attend conferences throughout their university studies. The majority of employers praised conference attendance by students. Dr. Reem and Dr. Mazin held that conferences offer opportunities for students to gain experience and knowledge. Indeed, Dr. Reem asserts that students should seek knowledge through several different ways, including conferences:

Students have to make an effort to seek further knowledge and information from other means. It also adds value to students. **Dr.**

Reem

Conferences are a chance to exchange experiences with others and a good chance to gain experience from different people. **Dr.**

Mazin

Students can attend conferences and improve themselves ...

When they volunteer for such activities and attend such conferences, it teaches them a lot and makes them more confident. **Dr. Bayan**

However, Dr. Yousef thinks that participation in conferences would not add value to students in terms of working in the medical field. This perspective is from an employer who works in a private hospital. He also believed that research skills are not essential, as seen in the previous code, so logically he would undervalue conferences. He believes that graduates are appointed to just effectively treat patients. This is possibly the point of view of most private hospitals. As he put it:

As an employer, no [students participating in/attending conferences], does not interest me at all. **Dr. Yousef**

Similar to his statement with regard to scientific research (see Section 6.3.1.1), Dr. Fawaz also opined that for conference attendance and/or participation to be a quality attribute of

medical graduates, the conferences must be related to their medical specialty. He saw it as unbeneficial to attend a conference dedicated to a different specialty or discipline, and thought that students would not gain any advantages related to the medical labor market by doing that.

Conferences reflect that applicants are interested in one subject in a certain field. For example, if an applicant was applying for a vacancy in pediatric surgery and I looked at his CV and I found that he had attended a conference unrelated to general surgery, this would not attract me to him. **Dr. Fawaz**

The tendency to be interested in conferences seems to be a quality indicator of medical graduates from the perspective of employers. Apart from that, students can draw a number of benefits from conferences. Employers believe that conferences help students to develop knowledge and experience and to become more confident in handling their future work.

6.3.2 Interaction with the community

As a form of student engagement, providing services for the community is designed to encourage students to volunteer in services outside the university environment. The SaudiMeds framework asserts that the ability of graduates to get involved in services within the community is one of the essential attributes of Saudi medical graduates (Zaini et al., 2011). Similarly, medical employers strongly advocate services in the community for medical students. Surprisingly, Dr. Yousef, who disagrees with the other employers on the importance of research skills and conferences, praises community service as a quality attribute of medical graduates. He contended that the involvement of students in this type of service helps them to develop volunteering habits. Students who undertake community services indicate that they are hard workers who will give more than expected.

Involvement in community service gives you an indication that [students] are willing to work more than they are expected to ... So he/she would be able to serve and doesn't stick to what he is supposed to. **Dr. Yousef**

Dr. Adam also thinks that community service is essential. Students can volunteer to work and indeed they can even have worked in non-medicine fields. For example, working in a pharmacy can assist students with gaining broader insights into medicine from the beginning

of their studies. However, there should be limits on how far medical students can go in seeking work experience.

For instance, pharmacy students can go training in their summer vacation in a pharmacy to learn more about medicines so that when they graduate, they would have the needed experience. **Dr.**

Adam

In addition, community service and conferences make students more confident about themselves, from the perspective of Dr. Bayan. Providing services in the community are actually advantageous to both students and the community. They offer opportunities for students to learn, interact with people, and develop essential soft skills such as confidence. In addition, these services are beneficial to the community in terms of promoting health, raising awareness about particular illnesses, and providing free and accessible services.

When he/she volunteers for such activities ... it teaches him or her a lot and makes them more confident ... Students now raise awareness campaigns about diabetes and fast food in malls and everywhere you go. This raises the awareness of people, which consequently decreases the number of patients in hospitals. It is a win/win situation. **Dr. Bayan**

In addition, community services allow students to interact with patients and they therefore educate students about how to deal and communicate effectively with patients, as stated by Dr. Adnan. Indeed, medical students can gain access to work experience through such activities, which is absolutely what employers look for in new candidates.

The reason behind this is that when students communicate with patients, they will learn more about their daily lives, details, experiences and sufferings. All that increases their experience because medicine is all about the patients. **Dr. Adnan**

In summary, the two quality attributes of medical graduates covered in this section are possessing research skills, including attending and participating in conferences, and becoming involved in community services. Students are encouraged to learn in several different ways, which is why scientific research, conferences and community service are important quality indicators. As medicine is a dynamic science that needs constant exploration, research skills are essential to enable graduates to stay abreast of new

developments. In addition, providing services in the community helps students to be more confident, especially when dealing with patients. It is also crucial for universities to assist students to acquire volunteering habits so that they willingly help the community. These two quality attributes correlate with the attributes of the SaudiMeds framework (Zaini et al., 2011).

6.4 Chapter Summary

In conclusion, the thematic analysis resulted in three themes that comprise seven categories and 17 codes; these provide insights into employers' perceptions of high-quality medical graduates. This study has revealed that the most appreciated dimensions of medical graduates from the perspective of employers are soft skills, competencies, practical skills, employment readiness, interaction with the community and research skills. The employers see universities as being obligated to empower students with basic medical knowledge, and soft and practical skills. Subsequently, medical graduates receive additional training in hospitals in accordance with the needs of the labor market.

Medical employers strive to recruit medical graduates for their soft skills over their basic medical knowledge. Employers look for medical candidates with professional personalities who are able to deal effectively with others. Additionally, the practical skills of graduates were cited as being of particular importance. For that, medical students are expected to be exposed to extensive and supervised training experiences in order to become prepared for the medical field. Finally, employers encourage medical graduates to seek information in several different ways, such as through conferences, community services and scientific research. These practices indicate that students are confident, can take the initiative, and are willing to give more than expected. The findings of this chapter contribute to answering the second research question, along with the survey findings analyzed in the next chapter.

CHAPTER 7 SURVEY FINDINGS

7.0 Introduction

In the second stage of this study, a questionnaire was developed in line with the findings of the interviews and the NCAAA quality standards. The questionnaire items were grouped into two parts: 1) 47 Likert and two multiple-choice items were designed to measure the quality attributes of HEIs; and 2) 15 Likert and one multiple-choice item were designed to measure the quality attributes of medical graduates (see Appendix E). This questionnaire permitted employers to rate the importance of suggested quality attributes of graduates and the university itself. At the end of the questionnaire, one open-ended question was presented to capture any additional quality attributes, of either HE or medical graduates, that employers value.

The main purpose of this chapter is to present the quantitative findings of the questionnaire in Section 7.4. To do that, the decision was made to run EFA in order to reduce the number of variables that underpin each quality construct. Prior to the actual run of EFA, a KMO test was conducted to measure the appropriateness of the sampling for factor analysis. After extracting the new set of factors, the reliability of the questionnaire was confirmed and finally its validity was examined (see Section 7.5) to ensure that the study produces accountable and valid results.

Section 7.1 summarizes the study sample and the demographic data of the sample. The reliability of the questionnaire was tested and the result is presented in Section 7.2, demonstrating its internal consistency. Cronbach's Alpha values are shown to confirm the reliability of every quality scale. The software package used to analyze the data was IBM SPSS Statistics 26. Finally, the chapter ends with a summary of the questionnaire findings in Section 7.8.

7.1 Sample Population

7.1.1 Employers' sample size

The data collection in this study was conducted using online and hard copy questionnaires, as described in detail in the methodology chapter (see section 4.3.2 in Chapter 4). It was somewhat challenging to calculate the response rate for this study as it was impossible to know the exact number of people who received the link to the questionnaire. Also, the medical director offices at three hospitals had the responsibility of printing out and

distributing hard copies of the questionnaire to physicians and managerial staff, but it is unknown how many hard copies were produced.

The sample size for this study is 251 respondents. This response was within the recommended sample size (above 100), which means that it is a satisfactory size to generate valid and reliable findings. An online questionnaire was designed using SmarSurvey.com, as described in detail in the methodology chapter (see section 4.3.2 in Chapter 4). The questionnaire link was sent to medical directors at hospitals to share with all physicians. Additionally, the questionnaire was distributed through the WhatsApp application with the help of family and friends to share the link with physicians and/or hospital managerial staff. The disadvantage of using an online survey is that it is not possible to control who participates in the study, and therefore this study's survey was made open to all with no restrictions. Two irrelevant participants took part: one was a CEO at a bank and the other was an officer at a training and internship department. These two participants were excluded from the study to ensure the validity of the questionnaire results.

Three hospitals preferred to distribute hard copies of the questionnaire to their medical and managerial staff. Three paper questionnaires were not fully completed, and therefore not eligible and were excluded, and a total of 66 hard copy questionnaires were retained.

7.1.2 Employers' demographic data

The questionnaire included seven demographic data questions. The participants who took part in this study were medical employers from a number of public and private hospitals across Saudi Arabia. The demographic data of the participants is shown in Table 10.

Table 10

Demographic Data of the Questionnaire Participants

Gender				
	Frequency	Percent	Valid Percent	Cumulative Percent
Male	144	57.4%	57.4%	57.4%
Female	107	42.6%	42.6%	100%
Total	251	100%	100%	

Nationality				
	Frequency	Percent	Valid Percent	Cumulative Percent
Saudi	127	50.6%	50.6%	50.6%
International	70	27.9%	27.9%	78.5%
Unknown	54	21.5%	21.5%	100%
Total	251	100%	100%	
Workplace				
	Frequency	Percent	Valid Percent	Cumulative Percent
Private Sector Hospital	90	35.9%	35.9%	35.9%
Public/Government Sector Hospital	120	47.8%	47.8%	83.7%
University Hospital	38	15.1%	15.1%	98.8%
University	2	0.8%	0.8%	99.6%
Other	1	0.4%	0.4%	100%
Total	251	100%	100%	
Work Experience				
	Frequency	Percent	Valid Percent	Cumulative Percent
0–4 Years	20	8%	8%	8%
5–10 Years	81	32.3%	32.3%	40.2%
10–20 Years	82	32.7%	32.7%	72.9%

More than 20 Years	68	27.1%	27.1%	100%
Total	251	100%	100%	
Professional Rank				
	Frequency	Percent	Valid Percent	Cumulative Percent
Resident	25	10%	10%	10%
Registrar	104	41.4%	41.4%	51.4%
Consultant	99	39.4%	39.4%	90.8%
Top-level Manager	12	4.8%	4.8%	95.6%
Medical Director	3	1.2%	1.2%	96.8%
Quality Officer	1	0.4%	0.4%	97.2%
Other	7	2.8%	2.8%	100%
Total	251	100%	100%	
Country of Medical Degree				
	Frequency	Percent	Valid Percent	Cumulative Percent
Saudi	106	42.2%	42.2%	42.2%
International	101	40.2%	40.2%	82.5%
Unknown	44	17.5%	17.5%	100%
Total	251	100%	100%	
Previous Work Experience Abroad				

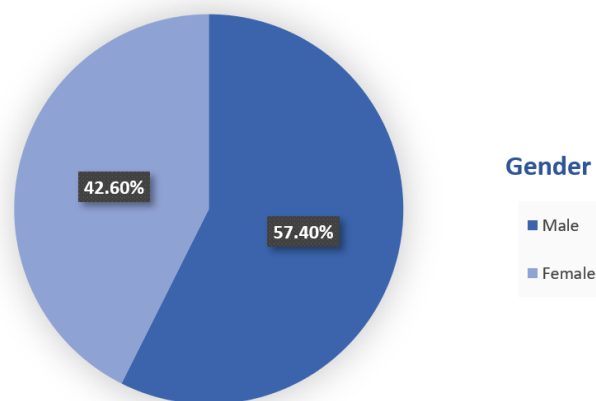
	Frequency	Percent	Valid Percent	Cumulative Percent
No	144	57.4%	57.4%	57.4%
Yes	107	42.6%	42.6%	100%
Total	251	100%	100%	

a) Gender

As shown in Figure 11, the sample comprised 107 female and 144 male respondents.

Figure 11

Gender of Participants

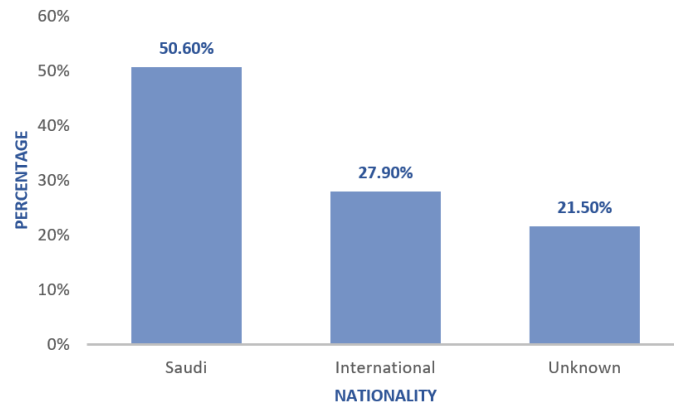


b) Nationality

The data shows that out of the total sample, 127 were Saudi, 70 were international, and 54 did not mention their nationality (see Figure 12). Although the nationality field was mandatory, some missing data occurred. This was because a number of paper-based questionnaires were distributed within some hospitals, as discussed in the Methodology Chapter. In this situation, with paper-based questionnaires, the researcher had no way of ensuring that the questionnaire was completed thoroughly, and clearly a number of participants preferred not to disclose their nationality. However, the data were included in the analysis and the nationality was labeled as unknown.

Figure 12

Nationality of Participants

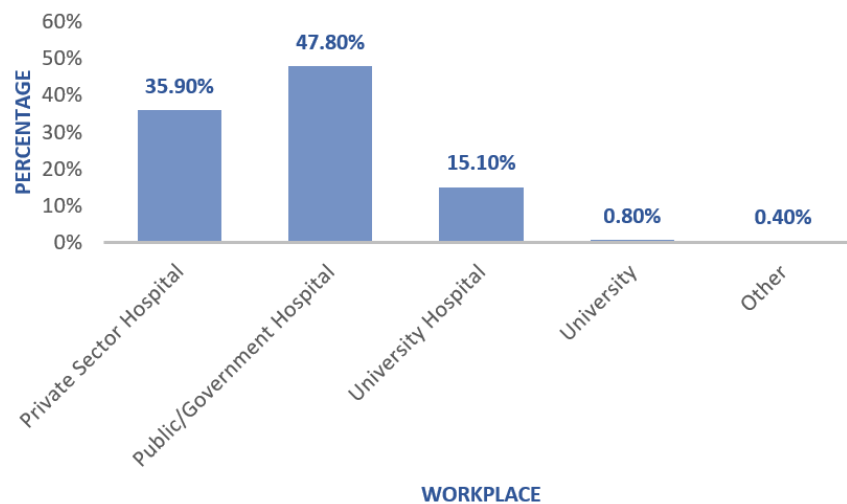


c) Workplace

As can be seen from Figure 13, the majority (120, 48%) of the sample worked in public/government hospitals. The remaining participants worked in private hospitals (90, 36%), university hospitals (38, 15%), university (2, 0.8%) or others (0.4%).

Figure 13

Workplace of Participants

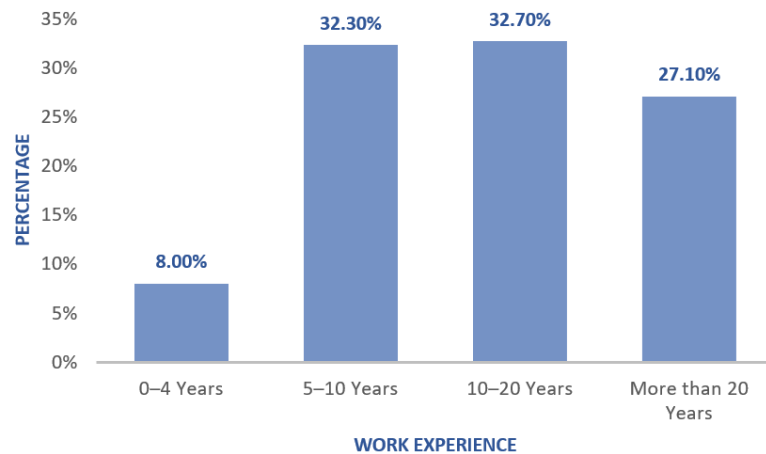


d) Work Experience

Overall, 33% of the participants had work experience of 10–20 years, followed by 32% with 5–10 years, 27% with more than 20 years of experience, and 8% with work experience of 0–4 years (see Figure 14).

Figure 14

Work Experience of Participants

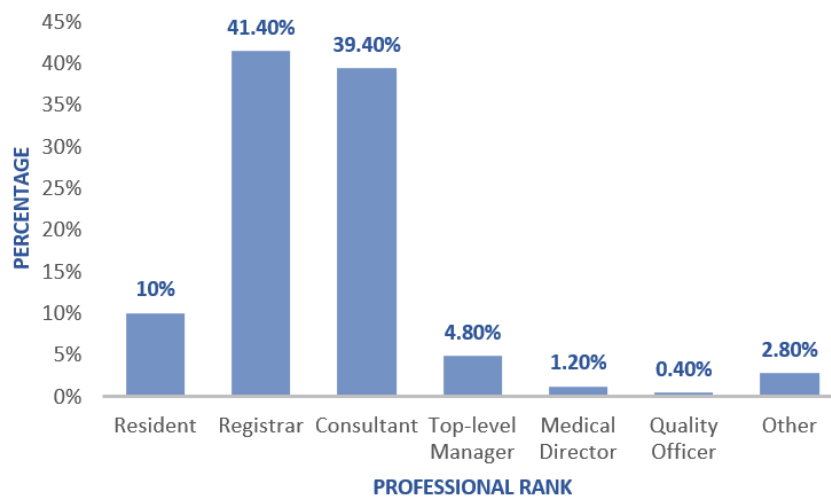


e) Professional Rank

As can be seen from Figure 15, the data for professional rank reveals that the largest group of participants were registrars at 41%, followed by consultants at 39%, residents at 10%, and top-level managers at 5%.

Figure 15

Professional Rank of Participants

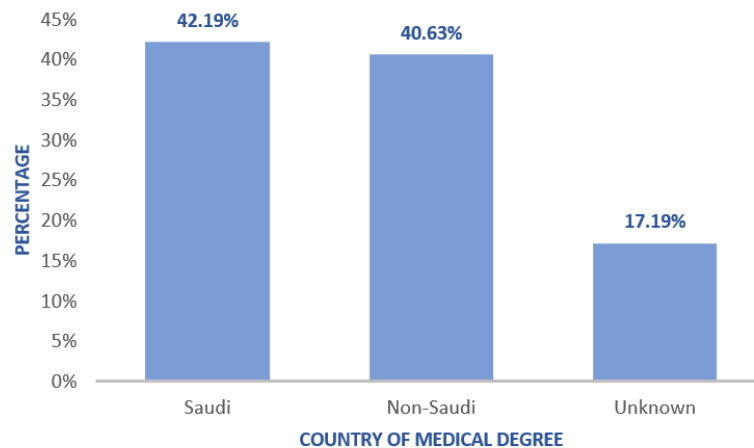


f) Country of Medical Degree

In relation to those who disclosed where their medical degrees were from, the distribution was fairly even between Saudi and international participants. One hundred and eight (42%) of the participants possessed a medical degree from Saudi Arabia, while 104 (41%) had an international degree (see Figure 16). However, 44 respondents did not mention their country of their medical degree, as this field was optional.

Figure 16

Country of Medical Degree

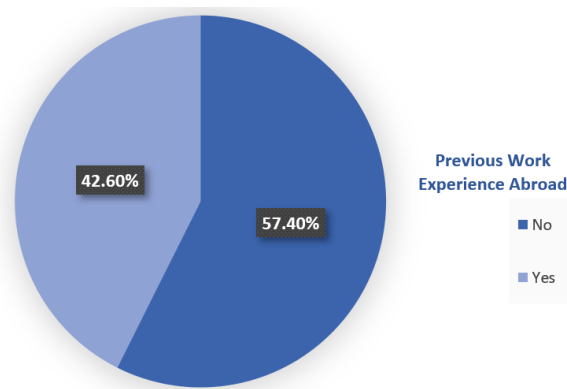


g) Previous Work Experience

Finally, out of the total sample, 107 (43%) had previous work experience abroad, whereas the majority of the participants (144, or 57%) did not possess any previous abroad experience (see Figure 17).

Figure 17

Previous Work Experience



7.2 Reliability Analysis of the Questionnaire

Generally speaking, before conducting any statistical tests, the reliability of a questionnaire must be tested. The common measure adopted in any quantitative study to measure reliability is Cronbach's Alpha. This test measures internal consistency and is most commonly used to examine the reliability of Likert data (Tavakol & Dennick, 2011). For that, a reliability scale was run, along with mean and standard deviation analysis.

7.2.1 Cronbach's Alpha

The inter-item consistency is examined through Cronbach's Alpha values (Cronbach, 1951). A higher value implies a stronger association between items (Mohamad, Sulaiman, Sern, &

Salleh, 2015). According to Hair, Black, Babin, Anderson and Tatham (2006), a Cronbach's Alpha value greater than 0.50 is within an acceptable range. The results revealed that the Cronbach's Alpha values of all the constructs were greater than the threshold value of 0.50, except for course and curriculum (0.383) (see Table 11). In this case, an advanced option "if the item is deleted" was used for the reliability analysis to trace the problematic item. After deleting one item, "Q14.1. Teaching materials are up to date and aligned with the needs of the community", Cronbach's Alpha for course and curriculum was higher than 0.50.

Table 11

Cronbach's Alpha Value for Every Construct

	Variables	No. of items	Cronbach's alpha
University Quality Attributes			
1	University Administration	4	0.963
2	Infrastructure	3	0.880
3	Student Support Services	5	0.788
4	Faculty Quality	3	0.693
5	Teaching Quality	8	0.738
6	Courses and Curriculum	3	0.508
7	Medical Training	5	0.814
8	Scientific Research	5	0.952
9	University Collaboration and Interaction with Stakeholders	2	0.688
10	Interaction with the Community	3	0.752
11	Quality Assurance and Academic Accreditation	3	0.843
12	University Image	3	0.770
Medical Graduate Quality Attributes			

13	Qualifications and Competency	10	0.791
14	Employment Readiness	5	0.816

7.2.2 Means and standard deviation

The mean values and standard deviation of all the constructs are shown in Table 12. Overall, the mean scores of each variable exceeded the numerical value of 4 except for University Administration, Courses and Curriculum and Interaction with the Community. However, the mean scores of these three variables are relatively close to the value of 4. This indicates that the participants lean toward acknowledging that the quality attributes included in the study are somewhat important for them. Likewise, the standard deviation of all 14 variables was found to be low, indicating that the response data are close to the mean.

Table 12

Mean and Standard Deviation Values

	Variables	Means	Standard Deviation
1	University Administration (UA)	3.8	1.1
2	Infrastructure (INF)	4.4	0.5
3	Student Support Services (SSS)	4.2	0.5
4	Faculty Quality (FQ)	4.3	0.5
5	Teaching Quality (TQ)	4.2	0.4
6	Courses and Curriculum (CAC)	3.7	0.7
7	Medical Training (MT)	4.5	0.4
8	Scientific Research (SR)	4.0	0.8
9	University Collaboration and Interaction with Stakeholders (UCAIWS)	4.2	0.6
10	Interaction with the Community (IWTC)	3.9	0.8

11	Quality Assurance and Academic Accreditation (QAAAA)	4.4	0.5
12	University Image (UI)	4.3	0.5
13	Qualifications and Competency (QAC)	4.1	0.4
14	Employment Readiness (ER)	4.2	0.5

7.3 Correlation Analysis (Pearson's Correlation)

As part of the factor analysis, it is essential to ensure that variables correlate with each other. The inter-item correlation was observed using Pearson's Correlation Analysis to measure correlation and examine multicollinearity among the variables in this study. The values of the correlation coefficient could vary from +1.00 to -1.00. A value closer to zero indicates no correlation between variables and a value closer to 1 indicates a high correlation (Field, 2018). Bryman and Cramer (1997) claim that a Pearson's "r" should not exceed 0.80, where values higher than .80 indicate possible multicollinearity. Despite the fact that multicollinearity is not an issue for factor analysis, extremely correlated variables must be removed from the data (Field, 2018). In order to set up the data for factor analysis, variables that score many small correlations (under .30) as well as variables that score many high correlations (multicollinearity) (above .80) must be excluded. The results revealed that all the correlations were less than 0.80, indicating that there is no multicollinearity issue in the data (see Table 13). The stars (*) attached to the values indicate the significance. The higher number of stars, the better the Pearson's correlation.

The correlation values for university administration were significantly and positively associated with infrastructure ($r = 0.486, p < 0.01$), student support services ($r = 0.491, p < 0.01$), faculty quality ($r = 0.396, p < 0.01$), teaching quality ($r = 0.274, p < 0.01$), courses and curriculum ($r = 0.245, p < 0.01$), scientific research ($r = 0.716, p < 0.01$), interaction with the community ($r = 0.605, p < 0.01$), qualifications and competency ($r = 0.531, p < 0.01$), and employment readiness ($r = 0.226, p < 0.01$). On the other hand, university administration was significantly and negatively correlated with medical training ($r = -0.223, p < 0.01$), while correlations between university administration and quality assurance and academic accreditation ($r = 0.86, ns$), university collaboration and interaction with stakeholders ($r = 0.093, ns$), and university image ($r = -0.024, ns$) were insignificant.

The correlation values for infrastructure were significantly and positively associated with student support services ($r = 0.681, p < 0.01$), faculty quality ($r = 0.680, p < 0.01$), teaching quality ($r = 0.306, p < 0.01$), medical training ($r = 0.284, p < 0.01$), scientific research ($r = 0.394, p < 0.01$), university collaboration and interaction with stakeholders ($r = 0.282, p < 0.01$), interaction with the community ($r = 0.336, p < 0.01$), quality assurance and academic accreditation ($r = 0.364, p < 0.01$), university image ($r = 0.317, ns$), qualifications and competency ($r = 0.396, p < 0.01$), and employment readiness ($r = 0.465, p < 0.01$). There was no significant correlation between infrastructure and courses and curriculum ($r = 0.073, ns$).

The correlation values for student support services were significantly and positively associated with faculty quality ($r = 0.689, p < 0.01$), teaching quality ($r = 0.388, p < 0.01$), courses and curriculum ($r = 0.211, p < 0.01$), medical training ($r = .246, p < 0.01$), scientific research ($r = 0.519, p < 0.01$), university collaboration and interaction with stakeholders ($r = 0.319, p < 0.01$), interaction with the community ($r = 0.486, p < 0.01$), quality assurance and academic accreditation ($r = 0.324, p < 0.01$), university image ($r = .265, p < 0.01$), qualifications and competency ($r = 0.550, p < 0.01$), and employment readiness ($r = 0.520, p < 0.01$).

The correlation values for faculty quality were significantly and positively associated with teaching quality ($r = 0.375, p < 0.01$), medical training ($r = 0.373, p < 0.01$), scientific research ($r = 0.439, p < 0.01$), university collaboration and interaction with stakeholders ($r = 0.331, p < 0.01$), interaction with the community ($r = 0.27, p < 0.01$), quality assurance and academic accreditation ($r = 0.472, ns$), university image ($r = 0.367, p < 0.01$), qualifications and competency ($r = 0.453, p < 0.01$), and employment readiness ($r = 0.509, p < 0.01$). No significant association was found between faculty quality and courses and curriculum ($r = 0.065, ns$).

The correlation values for teaching quality were significantly and positively correlated with courses and curriculum ($r = 0.412, p < 0.01$), medical training ($r = .192, p < 0.01$), scientific research ($r = 0.276, p < 0.01$), university collaboration and interaction with stakeholders ($r = 0.270, p < 0.01$), interaction with the community ($r = 0.316, p < 0.01$), quality assurance and academic accreditation ($r = 0.346, p < 0.01$), university image ($r = .342, p < 0.01$), qualifications and competency ($r = 0.318, p < 0.01$), and employment readiness ($r = 0.345, p < 0.01$).

The correlation values for courses and curriculum were significantly and positively associated with scientific research ($r = 0.176, p < 0.01$), interaction with the community ($r = 0.246, p < 0.01$), and qualifications and competency ($r = 0.149, p < 0.01$). However, there was no significant correlation between courses and curriculum and medical training ($r = -0.037, ns$), university collaboration and interaction with stakeholders ($r = 0.116, ns$), quality assurance and academic accreditation ($r = 0.112, ns$), university image ($r = -0.003, ns$), and employment readiness ($r = 0.106, ns$).

The correlation values for medical training were significantly and positively associated with university collaboration and interaction with stakeholders ($r = 0.389, p < 0.01$), quality assurance and academic accreditation ($r = 0.412, p < 0.01$), university image ($r = 0.08, p < 0.01$), qualifications and competency ($r = 0.130, p < 0.01$), and employment readiness ($r = 0.130, p < 0.01$). In contrast, there was no correlation between medical training and scientific research ($r = -0.072, p < 0.01$) and interaction with the community ($r = 0.007, ns$).

The correlation values for scientific research were significantly and positively associated with university collaboration and interaction with stakeholders ($r = 0.201, p < 0.01$), interaction with the community ($r = 0.718, p < 0.01$), quality assurance and academic accreditation ($r = 0.201, p < 0.01$), qualifications and competency ($r = 0.637, p < 0.01$), and employment readiness ($r = 0.313, p < 0.01$). However, the correlation between scientific research and university image ($r = 0.060, ns$) was insignificant.

The correlation values for university collaboration and interaction with stakeholders were significantly and positively associated with interaction with the community ($r = 0.282, p < 0.01$), quality assurance and academic accreditation ($r = 0.442, p < 0.01$), university image ($r = 0.409, p < 0.01$), qualifications and competency ($r = 0.386, p < 0.01$), and employment readiness ($r = 0.361, p < 0.01$).

The correlation values for interaction with the community were significantly and positively associated with quality assurance and academic accreditation ($r = 0.190, p < 0.01$), qualifications and competency ($r = 0.616, p < 0.01$), and employment readiness ($r = 0.341, p < 0.01$). However, the correlation between interaction with the community and university image ($r = 0.069, ns$) was insignificant.

The correlation values for quality assurance and academic accreditation were significantly and positively associated with university image ($r = .602, p < 0.01$), qualifications and

competency ($r = 0.352$, $p < 0.01$), and employment readiness ($r = 0.416$, $p < 0.01$).

The correlation values for university image were significantly and positively correlated with qualifications and competency ($r = 0.261$, $p < 0.01$) and employment readiness ($r = 0.379$, $p < 0.01$).

Finally, there was a positive and significant correlation between qualifications and competency and employment readiness ($r = 0.509$, $p < 0.01$).

Table 13

Correlation Analysis - Pearson's Correlation Values

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. UA	1													
2. INF	.486**	1												
3. SSS	.491**	.681**	1											
4. FQ	.369**	.680**	.689**	1										
5. TQ	.274**	.306**	.388**	.375**	1									
6. CAC	.245**	.073	.211**	.065	.412**	1								
7. MT	-.223**	.284**	.246**	.373**	.192**	-.037	1							
8. SR	.716**	.394**	.519**	.439**	.276**	.176**	-.072	1						
9.UCAIWS	.093	.282**	.319**	.331**	.270**	.116	.389**	.201**	1					
10. IWTC	.605**	.336**	.486**	.427**	.316**	.246**	.007	.718**	.282**	1				
11. QAAAA	.086	.364**	.324**	.472**	.346**	.112	.412**	.201**	.442**	.190**	1			
12. UI	-.024	.317**	.265**	.367**	.342**	-.003	.408**	.060	.409**	.069	.602**	1		

13. QAC	.531**	.396**	.550**	.453**	.318**	.149*	.130*	.637**	.386**	.616**	.352**	.261**	1	
14. ER	.226**	.465**	.520**	.509**	.345**	.106	.292**	.313**	.361**	.341**	.416**	.379**	.509**	1

7.4 Exploratory Factor Analysis (EFA)

The quantitative data originated from two scales – the quality of HE and medical graduate scales – that break down into subscales and, in turn, variables. A decision was made to run factor analysis to analyze the quantitative data in order to determine the quality constructs of both scales. Factor analysis is appropriate for this study because it reduces the number of variables and groups them into factors based on strong correlations among them. Factor analysis is a data reduction technique and it is often used to reduce the number of factors in a set of variables, as similar variables are extracted into the same factors to create a new construct, thereby explaining the relationship more accurately (Widaman, 1993). As Field (2018, p. 779), notes, factor analysis is used “to reduce a data set to a more manageable size while retaining as much of the original information as possible”.

Awang (2012) suggests running EFA for every construct. For that, for every scale, a separate principal axis factor analysis was conducted on the items using oblique rotation with a Kaiser Normalization with eigenvalues above 1. Running EFA on each of the subscales was considered but it was decided instead to run it with all the possible quality variables to extract a new set of factors. The oblique rotation was chosen to allow factors to correlate where possible, unlike orthogonal rotation (varimax), where correlation between factors is impracticable (Field, 2018). The variables that score correlations below 0.40 were excluded, as suggested by Hinkin (1995). This means that these variables showed a relatively low correlation with the extracted factors. The variables that scored less than 0.4 are highlighted in red and their corresponding values are not shown in the tables (see Tables 17 and 22). Additionally, three or more variables are necessary to form a factor and factors that obtained fewer than three variables were excluded from analysis, in line with Tabachnick and Fidell (2007).

7.4.1 Appropriateness of factor analysis (KMO analysis and Bartlett’s test of sphericity)

Prior to running the EFA, the KMO measure was undertaken to determine the appropriateness of the data and sample to fit factor analysis. The KMO Measure of Sampling Adequacy is an important assumption for factor analysis. Usually, factor analysis requires a

large sample size to avoid errors in reporting data (Yong & Pearce, 2013). This is why it is necessary to use the KMO to measure the adequacy of the sample for factor analysis. Manly (2005) states that a large ratio of 20:1 is required, indicating that if a study has 20 items as a measurement, the ideal number of participants required would be 400. However, for EFA, this sample size-item ratio can be considerable with smaller sample sizes and can reasonably be reduced to 5:1 (Manly, 2005).

The KMO measure for factor analysis must be greater than 0.5 and near to a value of 1 to be appropriate for factor analysis (Rencher, 2002). As seen in Tables 14 and 15 respectively, the KMO is 0.886 for the HE quality scale, and 0.774 for the graduate quality scale, indicating an appropriate sampling adequacy for factor analysis. The KMO value for this study is considered meritorious, according to Kaiser (1974). A KMO measure of less than 0.50 is considered unacceptable, meaning these items are not appropriate for factor analysis, while measures above 0.50 are acceptable, as follows: a score of 0.60 is mediocre, 0.70 is middling, 0.80 is meritorious, and 0.90 is excellent (Kaiser, 1974).

Moreover, the anti-image matrix was checked to ensure that all the individual diagonal elements were above the acceptable value of 0.5; any that are not must be removed to avoid unreliable analysis (Field, 2018). As shown in Appendices X and Y, the anti-image matrix shows that all the diagonal elements for this study are above the bare minimum of 0.50. According to Yong and Pearce (2013), failure to measure the appropriateness of the data hinders the establishment of reliable factors.

In addition, Bartlett's test of sphericity is another way to test the suitability of data for factor analysis. The test result has to be significant (p value < 0.05) to indicate a significant relationship between the variables (Field, 2018). As Tables 14 and 15 show, Bartlett's test of sphericity was significant ($p < 0.05$) for both scales, indicating appropriateness of the data for factor analysis.

Table 14

KMO and Bartlett's Test – Medical Education Quality

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.886
Bartlett's Test of Sphericity	Approx. Chi-Square	8787.729
	Df	1128

Sig.	0.000

Table 15

KMO and Bartlett's Test – Medical Graduate Quality

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.774
Bartlett's Test of Sphericity	Approx. Chi-Square	1736.952
	Df	105
	Sig.	0.000

7.4.2 Research question 1: higher education quality factors

On this scale, the service quality attributes of HE were measured using 12 subscales, comprising 47 items. In order to determine the precise quality attributes of HE from the perspective of the employer, principal axis factor analysis was used to reduce the number of constructs based on strong correlations of the variables within a construct (for more details see Appendix K). The EFA revealed 10 factors with 39 variables with eigenvalues above 1, along with 60.55% total variance (see Table 16).

Table 16

Total Percentage of Variance and Cumulative – Medical Education Quality

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.689	26.435	26.435	12.378	25.788	25.788
2	7.095	14.780	41.215	6.722	14.004	39.791
3	2.947	6.139	47.354	2.611	5.439	45.231
4	2.214	4.613	51.967	1.884	3.924	49.155
5	1.775	3.699	55.665	1.338	2.787	51.942

6	1.511	3.148	58.813	1.031	2.149	54.091
7	1.369	2.853	61.666	0.905	1.885	55.975
8	1.286	2.679	64.345	0.853	1.776	57.751
9	1.182	2.462	66.807	0.766	1.596	59.347
10	1.016	2.116	68.923	0.579	1.207	60.554

Table 17 shows the extracted factors and variables ordered by their factor loadings, as the ‘sort by size’ option was selected before running the factor analysis for easier factor interpretation. Although the EFA reveals 10 factors, factors that obtain fewer than three variables were excluded, as suggested by Tabachnick and Fidell (2007). Factors 3, 6, 8 and 9 were excluded and the EFA thus resulted in six factors to explain quality in HE. Additionally, as shown in Table 17, the variables highlighted in red were excluded because their factor loadings fell below the recommended coefficient value of 0.40, as suggested by Hinkin (1995). Surprisingly, 14 variables were excluded from factor loading (see Table 18) due to their low correlation and failure to form a factor. Therefore, these variables appeared to not reflect the attributes of HE quality from the perspective of employers.

Table 17

Factor Loading – Medical Education Quality

		Factor									
		1	2	3	4	5	6	7	8	9	10
SS S2	0.867										
SS S1	0.816										
SS S3	0.785										
IN F3	0.651										
SS S4	0.647										

IN F1	0.536									
IN F2	0.484									
FQ 1	0.406									
FQ 2										
MT 2		0.782								
MT 5		0.655								
MT 3		0.647								
MT 1		0.622								
MT 4		0.537								
TQ 6			0.905							
TQ 5			0.847							
TQ 7										
TQ 8										
SR 2				0.882						
SR 3				0.864						
SR 4				0.809						

SR 1				0.748						
IN TE R3				0.590						
SR 5				0.589						
IN TE R2				0.475						
SS S5										
IN TE R1										
QA 2					-0.884					
Q1 3					-0.742					
UI 3					-0.635					
QA 1					-0.616					
UI 2					-0.607					
UI 1					-0.569					
TQ 4						-0.448				
FQ 3										

TQ 3						0.641			
TQ 1						0.614			
TQ 2						0.450			
CC 1									
CO L1							-0.514		
CO L2							-0.402		
CC 4								0.562	
CC 2									
UA 2									0.793
UA 4									0.774
UA 1									0.770
UA 3									0.734
CC 3									0.415

Table 18

Excluded Variables – Medical Education Quality

Q12.2	Effective development plan of faculty members' teaching capabilities and skills.

Q13.7	Effective parallel teaching structure, where teaching theoretical and practical aspects are aligned.
Q13.8	Adequate medical specialty plan to fill the gap in Saudi hospitals.
Q11.5	Ability to attract international students.
Q18.1	Allow the community to benefit from universities' various facilities and resources (e.g., library, sport facilities, classrooms, and laboratories).
Q12.3	Effective mechanisms for faculty exchange between local and international universities.
Q14.1	Teaching materials are up to date and aligned with the needs of the community.
Q14.2	Incorporation of surgical courses early on in the academic year.
Q13.4	Student exchange program for exposure to different teaching environments at local and international universities.
Q13.4	Medical specialty decision made at the earliest possible stage.
Q13.6	Teaching strategies are designed according to the specialty at the earliest possible stage.
Q14.4	Incorporation of quality management and hospital accreditation courses.
Q17.1	Participation of stakeholders (teaching staff, employer, and students) in decision-making processes.
Q17.2	Culture of collaboration between universities and Saudi Commission for Health Specialties.

Overall, the EFA revealed six factors, consisting of 35 variables, to explain how medical employers conceptualize quality in HE. Table 19 shows the factor loading after rotation along with the eigenvalues, % of variance and Cronbach's Alpha. The variables that cluster under each factor suggest a new naming for each factor. The subsequent new set of factors is: 1) Educational Experience; 2) Medical Training; 3) Scientific Research and Engagement; 4) University Reputation; 5) Pedagogic Quality; and 6) Administrative Quality.

After a successful factor extraction, it is essential to test the reliability of the new set of

factors in order to ensure that the variables consistently measure the factor they fall under (Field, 2018). This was done using Cronbach's Alpha measure for every factor (see Appendix L). Referring to Cronbach's (1951) criteria for reliability coefficients, all factors show a relatively high reliability (above 0.8), except factor 5, the reliability of which is comparatively low (see Table 19). The low Cronbach's Alpha for factor 5 could be due to the small number of variables (three) in this factor, although 0.65 is considered to be an acceptable value for reliability.

Table 19

Extracted Factors along with Eigenvalues, % of Variance and Cronbach's Alpha – Medical Education Quality

	Educational Experience	Medical Training	Scientific Research	University Reputation	Pedagogic Quality	Administrative Quality
Academic support available to students	0.867					
Mechanisms available to ensure students' satisfaction	0.816					
Psychological support available to students	0.785					
Effective mechanisms to preserve the rights of people with special needs	0.651					
Effective system to identify gifted, talented, creative and underachieving students	0.647					
Adequate university infrastructure (buildings, classroom, student accommodation, library....)	0.536					

Sufficient laboratories, computer and technology equipment, and materials for academic programs	0.484					
Sufficient number of faculty members	0.406					
Training on innovative techniques and equipment		0.782				
Adequate follow-up supervision for students training at hospitals		0.655				
Training in traditional techniques and equipment		0.647				
Effective mechanisms to evaluate trainers and location of training before assigning students (safety, facilities available, and medical equipment)		0.622				
Availability of university hospital for students training		0.537				
Collaboration with international institutions to conduct research studies			0.882			
Collaboration with hospitals to conduct scientific research studies			0.864			
Effective mechanisms to develop research skills of teaching staff			0.809			
Public recognition of university research work quality			0.748			

Universities organizing periodic scientific conferences			0.590			
Cultivating an environment which encourages innovation and creativity for students, teaching and administrative staff			0.589			
Effective mechanisms to serve the community			0.475			
International accredited status of universities				-0.884		
National accredited status of universities				-0.742		
National reputation				-0.635		
Effective quality assurance and continuous evaluation systems				-0.616		
Being a leading university in the field				-0.607		
World ranking of universities				-0.569		
Active participation of students in the learning process					0.641	
Clear policies and procedures for the design of academic programs and students' assessments					0.614	
Availability of wide range of specializations and elective courses					0.450	
Clear university policies, rules and strategic planning						0.793

Clear policies and standards for student admission						0.774
Clear university mission, vision and goals						0.770
Effective systems for budgeting and financial accountability						0.734
Availability of distance education courses						0.415
Eigenvalues	12.69	7.10	2.21	1.77	1.37	1.02
% of variance	26.43	14.78	4.61	3.70	2.85	2.12
Cronbach's Alpha	.91	.81	.95	.85	.65	.93

Table 20

Factors Retained – Medical Education Quality

Factors	Number of Variables
Factor 1: Educational Experience	8
Factor 2: Medical Training	5
Factor 3: Scientific Research and Engagement	7
Factor 4: University Reputation	6
Factor 5: Pedagogic Quality	3
Factor 6: Administrative Quality	5

Factor 1: Educational Experience

The variables clustered under factor 1 explain the quality attributes of students' educational experiences. Throughout students' journey at university, universities are expected to run periodic evaluations of student satisfaction and then work accordingly to enhance their experience. They are also expected to establish effective mechanisms to identify talented and underachieving students, and those who are in need would be offered effective academic and

psychological support. In addition, an appropriate university infrastructure and the quality of faculty members would enrich students' educational experiences. In other words, properly equipped laboratories and libraries and an adequate number of faculty members must be in place to guarantee an effective educational experience.

Factor 2: Medical Training

This factor aligns with the preset category of Medical Training in Chapter 6. The variables under this factor demonstrate that in order to achieve desirable outcomes in students' medical training, every university has to have a teaching hospital. In addition, there should be a system to evaluate trainers and training sites to allow students to receive the optimal benefits of medical training. Finally, both innovative and traditional techniques and equipment should be given equal attention in the training of medical students.

Factor 3: Scientific Research and Engagement

The variables under this factor identify effective scientific research productivity. Collaborations with international universities and hospitals to conduct research studies as well as to organize conferences are preferable quality indicators in HE. In addition, universities must work to develop faculty members' research skills and to promote creativity and innovation among faculty members and students. Furthermore, the community service variable loaded under this factor.

Factor 4: University Reputation

The variables clustered under this factor address the approaches needed to build a good university reputation in society. Quality practices such as academic accreditation and world ranking are ways for universities to build a good image. In addition, striving to be a leading university and building a reputation in specific fields also contribute to gaining a good university image.

Factor 5: Pedagogic Quality

This is the smallest factor out of the six factors. The pedagogic quality factor comprises variables that describe how high the quality of pedagogy should be. This factor is directly related to curriculum and course design and delivery. Universities are expected to offer a wide range of courses and disciplines for students to choose from. To ensure proper teaching delivery, clear education-related policies should be established and maintained. Furthermore, in order to deliver better teaching quality to students, universities must encourage students to actively participate in their learning experience.

Factor 6: Administrative Quality

This factor was the least correlated factor of quality in HE from the perspective of employers. The variables under this factor are related to the administrative aspects of universities. These variables emphasize the availability of clear policies and rules, missions and vision, and financial and budgeting plans. Furthermore, the availability of distance courses falls under this factor.

In short, the EFA of the HE quality scale extracted 10 factors. However, four factors were excluded because they comprised less than three variables that were insufficient to represent a valid factor. In addition, the EFA reduced the number of variables from 47 to 34, as, following Hinkin (1995), variables with factor loadings below 0.40 were excluded. The analysis of the first scale resulted in six appropriate factors of quality in HE from the perspective of employers, namely: 1) Educational Experience; 2) Medical Training; 3) Scientific Research; 4) University Reputation; 5) Pedagogic Quality; and 6) Administrative Quality.

7.4.3 Research question 2: Medical graduate quality factors

In the second scale on the quality of medical graduates, the quality attributes of medical graduates were measured using two subscales composing 15 items. In order to determine the precise quality attributes of medical graduates from the perspective of the employer, principal axis factor analysis was used to reduce the number of constructs based on strong correlations of the variables within a construct (for more details see Appendix M). The EFA revealed four factors with 14 variables with eigenvalues above 1, along with 55.31% total variance (see Table 21).

Table 21

Total Percentage of Variance and Cumulative – Medical Graduate Quality

Initial Eigenvalues			Extraction Sums of Squared Loadings		
Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

1	4.919	32.794	32.794	4.496	29.971	29.971
2	2.321	15.477	48.270	1.998	13.321	43.292
3	1.438	9.586	57.856	1.014	6.760	50.052
4	1.218	8.120	65.976	0.790	5.264	55.316

Table 22 shows the extracted factors and variables ordered by their factor loadings. As in the above analysis, the ‘sort by size’ option was selected before running the factor analysis. As shown in Table 22, the variable highlighted in red was excluded because its factor loadings fell below the recommended coefficient value of 0.40, as suggested by Hinkin (1995). The variable “Scholarship opportunities to study abroad” was excluded from the analysis due to its low correlation. The fourth factor failed to present a valid factor because it includes inadequate number of variables (less than three variables) and, following Tabachnick and Fidell (2007), this factor was therefore excluded. This exclusion reduced the number of variables. The two variables “English language proficiency” and “Computer literacy” were excluded, bringing the total number of excluded variables to three, as shown in Table 23. Therefore, these variables appeared not to reflect the attributes of medical graduates’ quality from the perspective of employers.

Table 22

Factor Loading – Medical Graduate Quality

	Factor			
	1	2	3	4
GRADER3	0.809			
GRADER4	0.788			
GRADER5	0.638			
GRADER2	0.586			

GRADER1	0.561			
GRADQC1		0.824		
GRADQC2		0.813		
GRADQC3		0.495		
GRADQC5			0.906	
GRADQC6			0.843	
GRADQC9			0.691	
GRADQC4			0.401	
GRADQC7				-0.813
GRADQC8				-0.737
GRADQC10				

Table 23

Excluded Variables - Medical Graduate Quality

Q13.7	English language proficiency
Q13.8	Computer literacy
Q13.10	Scholarship opportunities to study abroad

Overall, the EFA revealed three factors, consisting of 12 variables, to explain how medical employers define the quality of medical graduates. Table 24 shows the factor loading after rotation along with the eigenvalues, % of variance and Cronbach's Alpha. The variables that

cluster under each factor suggest a new naming for each factor. The subsequent new set of factors is: 1) Employment Readiness; 2) Medical Comprehension; and 3) Research and Engagement.

According to Field's (2018) factor analysis approach, the reliability of the new set of factors was tested using Cronbach's Alpha for every factor (see Appendix N). Referring to Cronbach's (1951) criteria for reliability coefficient, all the factors show a relatively high reliability (above 0.7), as shown in Table 24.

Table 24

Extracted Factors along with Eigenvalues, % of Variance and Cronbach's Alpha – Medical Graduate Quality

	Employment Readiness	Medical Comprehension	Research and Engagemen t
Ability of medical graduate to train others	.809		
Sufficient work experience of medical graduate	.788		
Ability of medical graduate to hold the full responsibility of patients	.638		
Development of CV and preparation for job interviews	.586		
Participation of students in career orientation program at university	.561		
Solid medical theoretical background		.824	

Solid medical practical background		.813	
Deal with patients with special needs		.495	
Participation in academic events and conferences			.906
Participation in community activities			.843
Research skills			.691
Participation in voluntary work			.401
Eigenvalues	4.92	2.32	1.43
% of variance	32.79	15.48	9.59
Cronbach's Alpha	.816	.756	.833

Table 25

Factors Retained - Medical Graduate Quality

Factors	Number of Variables
Factor 1: Employment Readiness	5
Factor 2: Medical Comprehension	3
Factor 3: Research and Engagement	4

Factor 1: Employment Readiness

The variables clustered under the first factor indicate how students should be prepared for the work field. Apart from academic achievement at university, students are encouraged to get involved in career orientation and employment preparation throughout their studies. In order to prepare for the medical labor market, students must gain appropriate work experience and be trained to effectively treat patients.

Factor 2: Medical Comprehension

The second factor addresses the essential medical background needed for the labor market.

The attainment of appropriate medical knowledge and practical skills underpins the quality of medical graduates. This factor comprises only three variables, albeit crucial ones.

Factor 3: Research and Engagement

This factor covers the conduct of research and the engagement of students. Apart from conducting research studies, students are encouraged to attend and preferably participate in, scientific conferences. In addition, engagement in this factor refers to the involvement of students in activities beyond the immediate academic setting. This means that students are expected to participate in voluntary work, which could be done individually, whereas getting involved in community service should be arranged and organized through the university.

In brief, the EFA of the medical graduate scale was conducted on 15 items, resulting in the extraction of four factors. Only one variable, under the fourth factor, was excluded for having a factor loading value below 0.4. The fourth factor was excluded for failing to possess a sufficient number of variables (i.e., more than three), following Tabachnick and Fidell (2007). As a result, an additional two variables were excluded, making the total number of retained variables 12.

In this section, the final set of factors for conceptualizing quality in HE and medical graduates from the perspective of employers was discussed. The EFA extracted six appropriate factors for the HE scale and three appropriate factors for the medical graduate quality scale. A reliability analysis of the new set of factors was conducted and it revealed relatively high reliability among all the factors. The validity of these newly emergent factors was then tested, as shown below.

7.5 Validity of the New Set of Factors

According to Kelley (1927), validity in research refers to measuring what the instrument intends to measure. Validity can be measured internally and externally. Internal validity refers to validating a study to confirm that it can generate trustworthy findings. External validity is justified if a study's results can be generalized to other situations, populations and times (Cronbach & Meehl, 1955). Validity for the new set of factors, in both the HE quality and medical graduate quality scales, was established through convergent and discriminant validity.

7.5.1 Convergent validity

Convergent validity indicates that the variables in a single factor have a high correlation.

When undertaking EFA, if the factor loadings of the variables in a factor are found to be greater than 0.5, or are on average greater than 0.7, then convergent validity is established. In this analysis, all the variables in a single factor have a factor loading greater than 0.5, establishing a high correlation among the variables (see Tables 19 and 24). However, a few factor loadings, as seen in both scales, fall below 0.5, although the values are relatively close to 0.5. Convergent validity is also influenced by sample size; the larger the sample size, the more accurate the validity. However, for smaller sample sizes, the required factor loadings have to be unusually high. As the KMO = 0.886 for the HE quality scale and KMO = 0.774 for the medical graduate quality scale, the sample size for this study was found to be adequate and appropriate. Hence, for factor loading, convergent validity was established for the findings of this study.

7.5.2 Discriminant validity

Discriminant validity refers to a situation when factors are uncorrelated and distinct. In other words, variables within single factors must relate to each other more strongly than they do to variables in other factors. A common and effective way to examine discriminant validity, in EFA, is to observe cross-loadings of variables where they fall under more than one factor. However, if there are any cross-loadings, they must not exceed a value of 0.2. In this study, no cross-loadings were identified in either the HE quality scale or the medical graduate quality scale (see Appendix K and M), and hence discriminant validity was established.

Discriminant validity can also be established by examining the correlation matrix. The correlation matrix shows the correlation between the new extracted factors (see Appendix K and M). Usually, a score or value greater than 0.70 indicates a high correlation among the factors (Field, 2018). The correlation matrices of the new extracted factors, for both scales, show that the inter-item correlation between variables does not exceed 0.7, establishing discriminant validity.

Overall, no cross-loading of factors was observed in the factor analysis and all the extracted factors had eigenvalues greater than 1. The reliability of the extracted factors was examined and Cronbach's Alpha values were greater than 0.05. Additionally, factor loadings under 0.40 were considered unacceptable and excluded. Thus, the validity of the new set of factors was established.

7.6 Analysis of the Multiple-choice Questions

The questionnaire included three multiple-choice questions; two in the first part and one in the second part. At the end of the first part, as the university's reputation could be perceived and identified in various ways, the employers were able to choose from a list of preferable options the values that would help universities to build a good reputation. In addition, the employers were asked to indicate, from a preset list, how they would prefer to participate in HE. The employers were not restricted to the preset list of options; there was an option labeled "other" that the employers could choose to explicitly add any options they thought appropriate to these questions. In practice, this option was rarely used.

Figure 18 illustrates, from the perspective of the employers, the main approaches that could be used by HEIs to build a respectable reputation. Looking at the chart, it is clear that academic accreditation and world ranking are the most valued approaches. More than half of the employers chose these as being key to reputation building. Furthermore, half of them believed that graduates' performance in hospitals reflected the reputation of the universities that they had graduated from. On the other hand, a small minority of employers thought that community service was linked to a university's reputation. Additionally, a few employers believed that permitting employers to engage in HE contributed to building an institution's reputation.

Figure 18

Employers' Perspective on University Practices to Build a Good Reputation

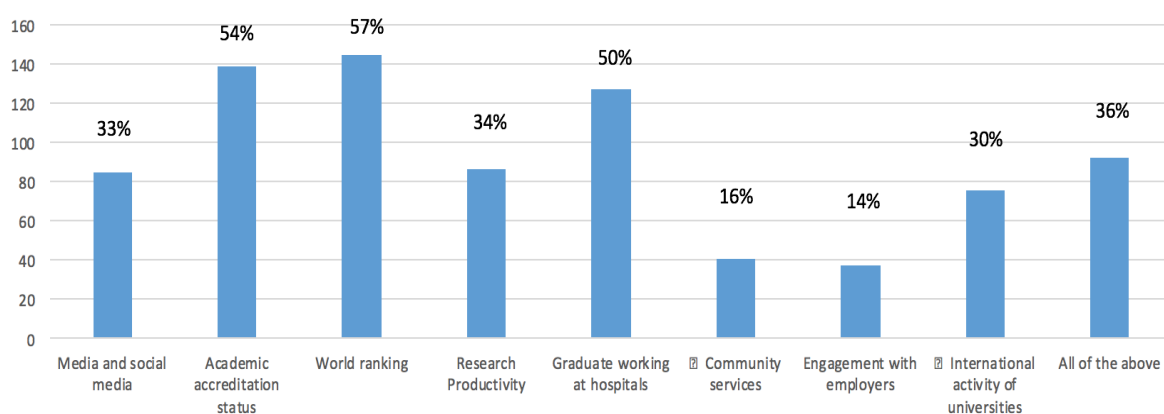
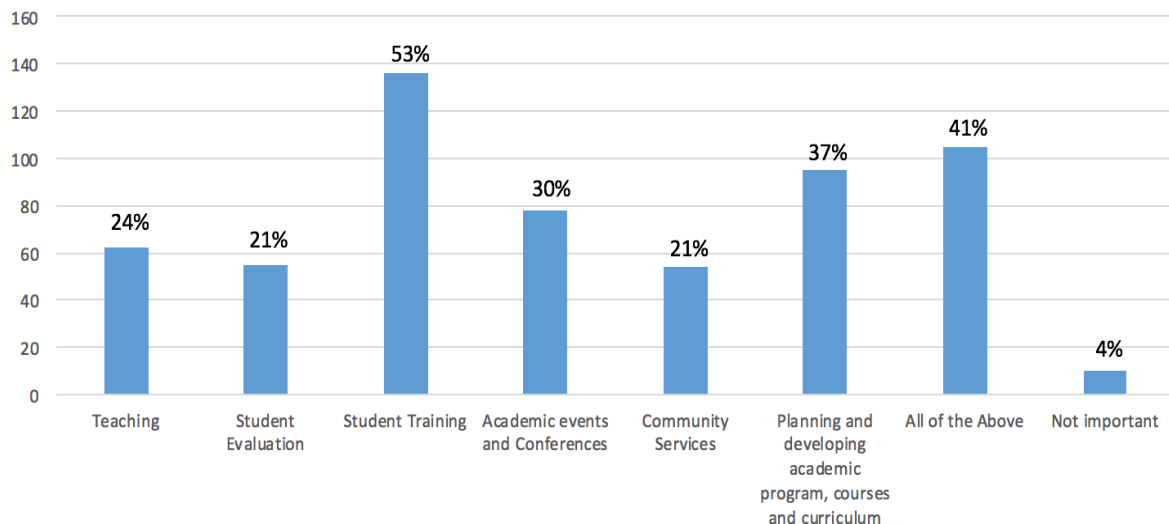


Figure 19 shows the ways preferred by employers to be involved in HE. Although employer involvement does not ensure a good reputation, as seen in Figure 18, a small minority of employers think that their engagement is not important to HE. This implies that most employers

value their involvement in HE. It is clear that the majority of the employers think that their role in HE lies in training medical students in hospitals, as the highest percentage accounts for training. Moreover, nearly one-third of employers believe that they should take part in developing academic programs and medical curricula. One-third of employers believe that they should be invited to participate in and attend academic events and conferences. On the other hand, student' evaluations and community service approaches scored the lowest, accounting for less than one-quarter of employers. In spite of employers' preferences for a particular way to be involved in HE, nearly half thought that employers should be involved in all of the mentioned practices in HE.

Figure 19

Employers' Preferences for their Involvement in Higher Education

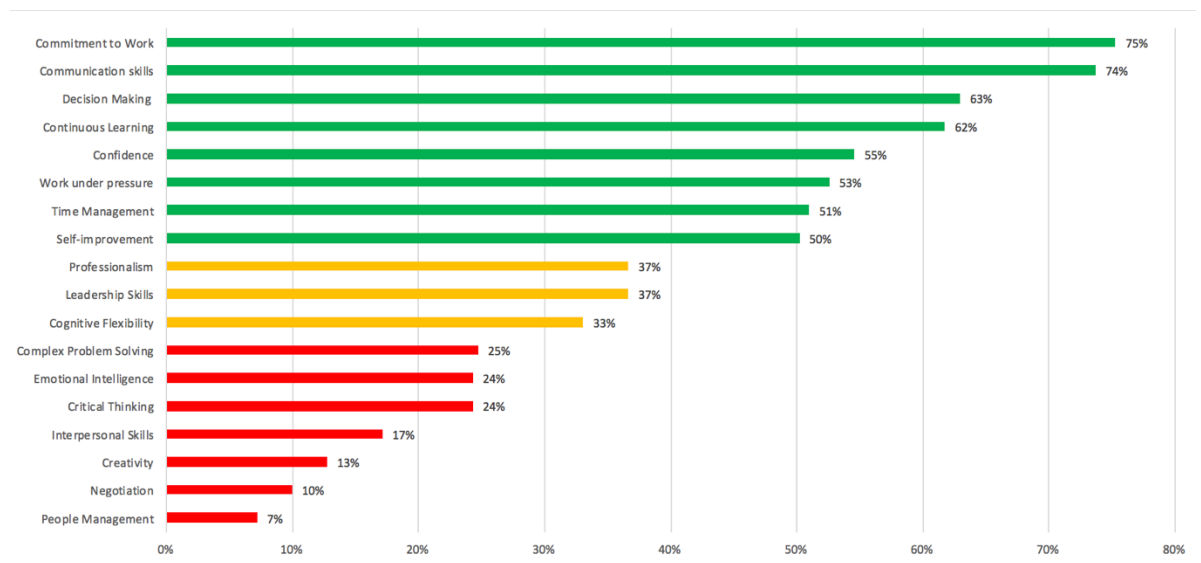


Moreover, the end of the second part of the questionnaire included a multiple-choice question on the soft skills that are essential for the medical labor market. This question asked the participants to choose seven important soft skills that they sought in a high-quality graduate, from a list of 18 skills. The questionnaire settings were adjusted to limit the choice to seven. However, it transpired that a number of participants wished to expand the maximum number of chosen skills by adding some in the last open-ended question, as shown in the next section. A decision was made to add these counts to the total count of the multiple-choice question answers to provide a clearer picture of the participants' perspective. The results show that the employers most value eight skills: commitment to work, communication, decision making, continuous learning, confidence, ability to work under pressure, time management, and self-

improvement skills (see Figure 20). These skills were chosen by more than half of the employers. Nearly one-third chose professionalism, leadership and cognitive flexibility as essential skills for the medical labor market. The remaining skills were selected by less than half of the participants, probably reflecting their minimal importance in the medical labor market.

Figure 20

Employers' Preferences for Essential Soft Skills for the Medical Labor Market



7.7 Analysis of the Open-ended Question

Finally, the questionnaire ended with a question that allowed the participants to add any quality attributes that were not mentioned in the questionnaire and to narratively express their views about quality. Apart from the responses on soft skills that were added to the previous multiple-choice question, eight participants added their views in this question. Three were irrelevant to the study aim and were thus excluded. The responses are mostly covered in the questionnaire items and support the analysis of the questionnaire. Two participants mentioned the importance of students attaining soft skills throughout their studies and two others emphasized the importance of medical training and the ability of students to obtain the optimal benefits from training. Their comments were as follows:

- 1) Learning outcomes quality does not mean the quality of theoretical knowledge. Students should be trained on and attain time management skills and commitment to work. Students should be also trained to act professionally and be able to make decisions and consequently build self-confidence. To attain these skills, students should be trained, in their internship period, in outstanding and good reputation medical centers with highly skills practitioners.
- 2) Emphasis should be placed on first-year students to train them on acting in emergency situations, including advanced CPR.

Three participants mentioned quality attributes of universities pertaining to faculty members and teaching quality. Moreover, one participant asserted the importance of keeping the curriculum and students up to date in terms of advances in the field. This means that universities must work on aligning teaching with the needs of the labor market. Also, this same participant thinks that governing the admission criteria as well as the procedures would help to better prepare graduates for the labor market:

- 1) Group work in academic committees. No central management. Transparency. Appreciate, support and acknowledge initiatives. Avoid negative and positive personal situations. Diversity in faculty members. competitive spirit within students and faculty.
- 2) More dependence on online education.
- 3) Constant investigations into the needs and challenges of the labor market and their alignment with HE. Curriculum should be flexible and aligned with the rapid changes and advances in medicine. Students should be up to date and taught these advances. Universities should seek to attract and support outstanding and creative students and therefore produce these creative students to governmental institutions to achieve national excellence in medicine.

7.8 Chapter Summary

In summary, EFA was used to analyze the questionnaire data. Two separate exploratory factor analyses were conducted for the two parts of the questionnaire: part 1 (HE quality, 47 variables), and part 2 (medical graduates' quality, 15 variables). The EFA of the 47 variables of HE quality extracted six appropriate factors. Additionally, 14 variables were excluded due to their low factor loadings, resulting in 35 variables. The six retained factors were: 1)

Educational Experience, 2) Medical Training, 3) Scientific Research, 4) University Reputation, 5) Pedagogic Quality, and 6) Administrative Quality. The EFA of the 15 variables of medical graduate quality extracted three valid factors. One variable was excluded due to its low factor loading and two more variables were excluded due to their failure to form a factor, resulting in the retention of 12 valid variables. The three extracted factors describing the quality of medical graduates are: 1) Employment Readiness, 2) Medical Comprehension, and 3) Research and Engagement. The new set of factors showed high reliability and validity.

In the first part of the questionnaire, two multiple-choice questions revealed that employers believe that institutional reputation can be achieved through academic accreditation status, world ranking and graduates' performance in the labor market, while involving employers in HE does not necessary help to build reputation. However, the majority of employers saw their involvement in HE as crucial, particularly in training medical students.

The findings of this chapter, along with the qualitative findings from Chapters 5 and 6, will contribute to the fulfillment of the study's objective and the proposal of a new quality model in HE. In the following chapter, the qualitative and quantitative findings are discussed in the context of the literature. Toward the end of the discussion, a quality model for HE is set out from the perspective of employers.

CHAPTER 8 DISCUSSION AND CONCLUSION

8.0 Introduction

This chapter discusses the findings of the study to answer the research questions. This study employed a mixed-methods research framework and the findings emerged from two different stages of data collection: semi-structured interviews followed by a survey. The qualitative and quantitative findings were combined to provide a rich and in-depth discussion about the quality attributes of HE and medical graduates from the perspective of employers (see Section 8.1). This discussion provides the answers to the two research questions. The first question concerns the quality of medical education and the second one concerns the quality of medical graduates (see Chapter 1). Based on the findings, a quality model for HE from the perspective of medical employers in Saudi Arabia is proposed, encompassing the quality attributes of both HE and medical graduates. This study is original in providing a quality model of medical education specifically, an area where limited work has been done in the literature. Moreover, in light of the quality models available in the literature (see Chapter 3), this study offers a novel and unique quality dimension pertaining to medical training and internship programs for the quality model in medical education (see Section 8.4.1).

This chapter is divided into two sections, each dedicated to answering one research question. Section 8.2 discusses the quality attributes of medical education and Section 8.3 discusses the quality attributes of medical graduates. The proposed model of quality in medical education is visually presented in Section 8.4, including the implications of the study, its limitations, and recommendations for future research. Finally, a brief conclusion of the study is presented in Section 8.5.

8.1 Discussion of the Research Outcomes

Medical employers were approached to explore their insights into quality in HE using two different methods: a series of interviews followed by a survey. The results from the analysis of both the interviews and the survey led in a similar direction and generated similar themes and points. After a continuous cycle of thematic analyses, a number of themes emerged that were broken down into codes to explain quality in HE and medical graduates from the perspective of employers. Factor analysis was used to detect correlations between the emergent codes in the thematic analysis (called ‘variables’ in factor analysis), to reduce the number of variables, and to extract a number of factors to accurately explain quality from the

perspective of medical employers.

For the first research question, the findings from the interview data revealed that employers' perspectives on quality in HE can be grouped into four themes: administrative quality (infrastructure and university rules and regulation); educational quality (teaching quality, faculty member quality, and medical training); scientific research and engagement culture (scientific research, community services, and collaboration with stakeholders); and university reputation (international activities, graduate performance in the labor market, world ranking, and academic accreditation). The factor analysis of the questionnaire data generated six factors to explain quality in HE from the perspective of employers: educational experience, medical training, scientific research, university reputation, pedagogy quality, and administrative quality. There was overlap between the two analyses, with scientific research and engagement, university reputation, and administrative quality appearing in both. As a result of the factor analysis, the educational quality theme was divided into three dimensions, namely, educational experience, medical training, and pedagogic quality. The educational experience dimension concerns the quality attributes of student support and satisfaction, infrastructure quality, and faculty member quality, while the pedagogic quality dimension covers teaching policies and procedures, courses and students' learning. The medical training dimension covers training experience quality, supervision systems and location evaluation. Factor analysis merged the infrastructure factor from the administrative quality theme into the educational experience factor. As in the thematic analysis, the community services factor is part of the scientific research factor.

For the second research question, the interview data reveal that employers' perspectives of the quality of medical graduates can be grouped into three themes: graduate employability (including soft skills, practical skills, and graduate competency); graduate readiness (including employment readiness and career orientation); and research and engagement experience (including research productivity and interaction with the community). The factor analysis extracted the same number of themes, namely employment readiness, medical comprehension, and research and engagement. Graduate employability was replaced by medical comprehension in the factor analysis to explain the theoretical and practical medical background as quality attributes of medical graduates. Soft skills are part of the graduate employability theme; however, they were not listed as an item on the questionnaire scale, but were mentioned in a separate multiple-choice question. To overcome this limitation, soft

skills are discussed separately below, focusing on the input obtained from the interviews along with the results of the multiple-choice question. In this discussion, soft skills will be discussed as part of the graduate readiness dimension as they are more closely related to this than to medical comprehension (see Section 8.3.1). The remaining themes are the same in the factor analysis.

The findings from the two stages reveal a good degree of agreement. Given that the survey stage involved a larger population, the discussion in this chapter is presented according to the factors emerging from the questionnaire data (see Sections 8.2 and 8.3). These are consequently combined to develop a quality model in medical education, as visually illustrated in Section 8.4.

8.2 Model of Quality in Medical Education

The proposed quality model in this study consists of two key parts, the quality of medical education and the quality of medical graduates (see Section 8.4). This section explains the insights of employers and how they conceptualize the quality of medical education, based on the six dimensions identifying the quality attributes of medical education (administrative quality, educational experience, pedagogic quality, medical training, scientific research, and university reputation) and compares them with the literature.

As a result of the factor analysis, seven variables were excluded from the dimensions to explain the quality of medical education (see Chapter 7). These variables failed to correlate with any of the extracted factors. Although they indicate quality in HE according to the literature, the medical employers in this study did not consider them as quality attributes of medical education. These variables are related to development plans for faculty members, a parallel teaching structure, a medical specialty plan, the ability to attract international students, the accessibility of university facilities to the public, faculty exchange programs, and the alignment of courses with the needs of the community.

It was somewhat surprising that the alignment of courses with the needs of the community and the labor market was not a quality attribute from the medical employers' perspective, since many prior studies have argued the contrary (Alshare & Sewailem, 2018; Atef & Balushi, 2017; Belwal et al., 2017; Griffin & Coelho, 2019; Thomas et al., 2016). Bendermacher et al. (2020) assert that the alignment of courses to the needs of the medical labor market is linked to the quality of medical education. These studies based their

conclusions on the perspectives of either students and/or academics, whereas this study shows the perspective of medical employers. This study concludes that this kind of alignment is not a quality attribute of medical education. Moreover, this study reveals that attracting international students from across the world to Saudi universities is not considered important for the quality of medical education by employers. Although universities in Saudi Arabia have been actively encouraged by the NCAAA quality standards to attract international students in order to earn accredited status (NCAAA, 2018), this study claims that this has limited value for the quality of medical education in the eyes of medical employers.

The parallel education system style was also excluded from being a quality attribute of medical education from the perspective of employers. In this type of system, students receive clinical and practical training from the earliest stages in their learning journey, unlike traditional systems where students start studying theory then move on to practice in hospitals. This shift to a parallel system was initiated by the Tomorrow's Doctor framework in the UK and it was found to be advantageous to students (Watmough et al., 2010) and to residents in hospitals (Hoellein et al., 2007). The parallel educational system in medical education has played a role in enhancing graduates' performance and attitude (Illing et al., 2013; Watmough et al., 2010) and graduates feel more prepared with this style of learning (Watmough et al., 2010). Despite that, it appears that employers do not perceive this type of system as a quality attribute.

Contradictory to the findings of Lindberg (2011), who found that a medical specialization plan is crucial for medical education in Sweden, this study shows that building a partnership with the Saudi Commission for Health Specialties to frame a specialization plan is not a quality attribute of medical education from the perspective of employers, even though employers raised concerns about the large number of medical graduates entering the labor market. The perspectives of medical employers from these two countries vary. Indeed, a study by Alshahrani et al. (2015) shows that the majority of medical interns in Saudi Arabia prefer to specialize in internal medicine. Such studies are crucial to avoid congestion in some specialties and a shortage in others. In this study, a specialization plan was excluded as a quality attribute, although employers questioned the unstructured distribution of students across medical specialties.

Apart from the wide range of quality attributes of medical education shown in Section 8.2, development plans for faculty members, a parallel teaching structure, a medical specialty

plan, the ability to attract international students, the accessibility of university facilities to the public, faculty exchange programs, and the alignment of courses with the needs of the community are not part of the quality model of medical education from the perspective of employers. In the next sections, I provide a description of how employers conceptualize the quality of medical education with a variety of attributes to be attained by universities and medical graduates. The description of these attributes, along with the quality attributes of medical graduates in Section 8.3, together build the comprehensive quality model in medical education visually presented in Section 8.4.

8.2.1 Administrative quality

From the perspective of employers, administrative quality is a quality dimension of medical education. Consistently, this dimension also appears in the models developed by Ieli and Anil (2014), Teeroovengadum et al. (2016), Latif et al. (2017), and Noaman et al. (2017). However, none of these models was dedicated to medical education. The Russell Group (2012) and Kutbi and Hashim (2017) assert that the governance aspects of HE are linked to quality. Although the previous conclusions are not drawn from the perspective of employers, they nonetheless correlate with the findings of this study. This study shows that employers believe that devising a strategic plan, vision and mission for universities is a quality attribute in medical education. This finding is consistent with Lagrosen et al. (2004), who found that having a clear mission and vision is an indication of quality. Indeed, these practices are required by the NCAAA quality standards to earn an academic accredited status in Saudi Arabia.

Additionally, as part of the administrative aspect of HE, this study reveals that employers view having an effective financial and budget plan as a quality attribute in medical education. Although Biloslavo and Bratoz (2013) found that financial aspects are the least valued quality attribute in HE from the perspective of employers, this study shows the contrary. However, the study of Biloslavo and Bratoz (2013) did not target medical education, which this study does, and here employers rate the availability of effective systems for finance and budgeting as being important for medical education. The proper allocation of financial resources and budgets would indicate a proper utilization and recruitment of resources and facilities for the achievement of high-quality performance, consequently producing highly competent medical graduates. Similar to the findings of Allam (2020), this study concludes that employers see designing clear policies and rules for student admission as a quality attribute of medical education. This finding also correlates with the findings of Jain et al. (2011), who conclude

that the quality of HE is linked to the quality of inputs. However, in contrast to this study, which looked at the quality of medical education, the studies of Allam (2020) and Jain et al. (2011) had a general scope in HE.

Additionally, employers confirm that having an effective distance education plan is a quality matter in medical education. Indeed, with the emergence of the COVID-19 pandemic, distance education has become a normal practice and often the only option available. To comply with the working-from-home rules that were in effect in many countries around the world, work in HE and many other sectors shifted online. Universities worldwide responded to this by introducing distance education and courses through a variety of available online platforms. Although distance education was available as an option for studying before the pandemic, the pandemic proved that this kind of education is actually effective and achievable, although more studies are needed to support this assumption (see Section 8.4.3).

8.2.2 Educational experience

This study concludes that from the perspective of employers, educational experience is a quality dimension of medical education. This aligns with the quality model developed by Teeroovengadum et al. (2016). This study concludes that employers believe that faculty members' quality and being available in sufficient number are quality attributes of medical education, similar to the findings of Abbas (2020), the Russell Group (2012), Biloslavo and Bratoz (2013), Noaman et al. (2017), Latif et al. (2017), Kutbi and Hashim (2017), and Allam and Malik (2020). These studies discussed the quality of faculty members as part of the quality of HE. However, none of these studies targeted medical education or the perspective of employers. While the current study shows that medical employers value a sufficient number of faculty members, their number is probably not adequate by itself to deliver high-quality teaching and learning experiences in medical education. Quality is as important as quantity. Universities need to ensure that there is a sufficient number of faculty members and that they are of high quality. High-quality faculty members are those who possess good communication skills (Abbas & Sagsanm, 2019), up-to-date knowledge and awareness of trends in industry (Abbas, 2020), and effective behavior in teaching and with students (Chong & Ahmed, 2015). Faculty members' quality has been found to be linked to the reputation of universities (Brown et al., 1998; Khan & Yildiz, 2020), thus their quality impacts employers' perceptions of the quality of individual HEIs.

Moreover, in order to achieve a high-quality medical educational experience for students,

employers regard the availability of effective equipment and facilities as a quality attribute in medical education, as they ensure a healthy learning and teaching journey. This was also reported by the Russell Group (2012), Biloslavo and Bratoz (2013), Abbas (2020), Jain et al. (2011), and Allam and Malik (2020). Additionally, this study concludes that employers perceive well-designed infrastructure and buildings as a quality attribute of medical education, as also found by Teeroovengadum et al. (2016), Tsinidou et al. (2010), Noaman et al. (2017), Jain et al. (2011), and Annamdevula and Bellamkonda (2012). Sohail and Shaikh (2004), Ali et al. (2016), and Allam and Malik (2020) found that the overall physical environment of universities is linked to students' satisfaction with their educational experiences, and probably contributes to students' retention in universities (Price et al., 2003). These studies have concluded that effective and adequate facilities and equipment, and infrastructure and buildings are quality attributes, mainly from the perspectives of students and/or academics, whereas this study concludes the same quality attributes but from the perspective of employers. For these two quality attributes, it seems that the perspectives of employers, students, and academic are alike.

Moreover, employers think that offering academic and psychological support to students contributes to the quality of medical education. This aligns with the findings of Allam and Malik (2020), Dicker et al. (2019), Jain et al. (2011), and Tomlinson (2012). Indeed, student support services have been found to contribute to the development of self-learning skills and the enhanced employability of graduates (Nicol, 2010). Additionally, employers assert that having effective systems to preserve the rights of students with special needs and to identify gifted and talented students is linked to quality in medical education. Besides having effective systems to identify and support underperformers, a system to recognize students with a gift or talent is key in medical education. Indeed, this practice has been recently added to the quality practices adopted by the NCAAA (2018).

Employers find that ensuring students' satisfaction is a quality attribute in medical education, as discussed by Bendermacher et al. (2020). Reaching out to students to measure the level of satisfaction is quite an effective approach to find improvement opportunities, as discussed by Jones (2010). The current study concludes that obtaining feedback from students in HE is a quality attribute of medical education, from the perspective of medical employers, as also discussed by Habib et al. (2019), Bendermacher et al. (2020), and Abbas (2020). Bendermacher et al. (2020) argue that involving students and various stakeholders in medical

education to provide feedback is a quality matter. This kind of feedback probably provides enhancement opportunities in medical education (Bendermacher et al., 2020) and is linked to universities' success (Awan et al., 2017), as students use university services such as facilities, administrative services, resources, teaching and learning, and many more. It is worth listening to students as this enables HEIs to detect any gaps and defects in their experience and thus make improvements and enhancements in HE. Indeed, achieving student satisfaction probably means better utilization of universities' facilities and services, although Anderson (2007) doubts the validity and trustworthiness of students' quality judgments, as students tend not to know what is best for them.

Employers firmly agree that their involvement in medical education is important, as concluded by this study. Collaboration between employers and HEIs is a quality attribute of medical education, echoing the findings of Abbas (2020), Alshare and Sewailem (2018), Thomas et al. (2016), Swailes et al. (2012), and Iqbal and Zenchenkov (2014). These studies were conducted in different disciplines and they emphasized that employers' involvement in HE takes the form of course and curriculum development and design, while the situation in medical education is different. The medical employers in this study have a different perspective. This study concludes that a number of employers prefer to be involved in the curriculum and the planning and designing of academic programs. However, employers assert that their involvement in medical education must be in the form of providing training and internship programs to medical students. Matu and Paik (2021) found that there is no evidence that the involvement of employers in HE enhances graduates' preparedness for the labor market. However, that study was related to HE in general, and this study concludes that in medical education, employers from both public and private sector hospitals believe that it is important that they be involved in medical training and internship programs.

8.2.3 Pedagogic quality

Dicker et al. (2019) found that employers emphasize graduates' performance in their assessment of quality in HE and they are less concerned with the way graduates are taught. However, this study shows the contrary. The pedagogic quality dimension was extracted to address the pedagogic quality attributes that employers perceive as critical in medical education. Similarly, a number of studies in the literature had a separate dimension for pedagogic quality, but this dimension is named "curriculum" in most models (Abbas, 2020; Hossain & Hossain, 2019; Ieli & Anil, 2014; Noaman et al., 2017). Bendermacher et al. (2020) and Bhowmik et al. (2013) argue that teaching and learning are critical to the quality

of medical education. In the current study, employers endorse the active involvement of students in their learning experience and perceive it as a quality measure of medical education, as discussed by Hoellein et al. (2007). This would probably help students to develop self-learning skills (Direito et al., 2012), as required by employers in this study (see Section 8.3.1).

Moreover, extracurricular courses are seen as a quality indicator in medical education, as discussed by Issa and Siddiek (2012). This study reveals that employers value the availability of a wide range of medical specializations and elective courses as a quality indicator of medical education, which is linked to the findings of Dicker et al. (2019), Allam (2020), and Abbas (2020). Students link the availability of extra-curricular activities not just to quality, but to the reputation of universities (Abbas, 2020). Similarly, Lagrosen et al. (2004) assert that offering a wide range of courses and postgraduate programs is a quality matter in HE. Lindberg (2011) found that employers consider the involvement of students in this kind of courses to be a valuable attribute of medical graduates, yet these activities need to be relevant to the medical field. With regard to the specialization options available, although employers think that a wide range of specializations is an attribute of quality, caution needs to be exercised to ensure that the available medical specialization options align with the needs of the labor market (See section 8.2). Moreover, as part of pedagogic quality, employers believe that the availability of clear policies for designing academic programs and assessing students is linked to the quality of medical education; this is similar to the findings of Allam (2020).

8.2.4 Medical training

This study highlights a unique and new quality dimension in medical education. Employers assert that training/internship programs are critical and key in medical education to demonstrate a high quality status (Canovi, 2020; Cranmer, 2006; Illing et al., 2013; Post et al., 2015; Willis & Taylor, 1999). All of these studies have discussed the significance of training programs for preparing students of different disciplines for the labor market. Yet, the literature lacks quality models that discuss medical training as a key dimension of medical education. The quality models in the literature tend to be general and/or not specifically designed for medical education (see Chapter 3). In this study, a separate quality dimension emerged for medical training and internship programs, indicating its importance in medical education. This study is original in that it targets the medical discipline only. In this study, medical training refers to the two years of training during medical studies and internship

programs that students undertake after completing five years of medical studies (see Chapter 2). Similarly, Jain et al. (2011) assert that exposing students to practical training in the labor market is a quality attribute of HE.

Medical employers claim that opportunities for training/internships could be a substitute for work experience for medical students. However, sometimes training can be challenging for students and trainers. Students believe that their involvement in training programs is quite limited (Illing et al., 2013). Post et al. (2015) claim graduates are not well trained because of a mismatch between training/internship programs and the needs of the labor market.

Employers think that a supervision strategy during medical training programs is a quality attribute in medical education. This perspective aligns with Brown et al. (2007) and Frankel and English (2004), who highlighted the importance of supervision and feedback during training programs. Supervision during training would bridge the gap between medical training and the labor market that was demonstrated by Post et al. (2015). Moreover, to overcome deficiencies in medical training and ensure the sustainable delivery of effective training programs to students, a system to continuously evaluate trainers and training locations should be established in medical schools. Employers believe that this kind of system indicates the quality of a university, as it shows a commitment to delivering high-quality medical training programs.

In addition, the employers believe that the availability of a university hospital to provide training opportunities to students is a quality measure of medical education. Jain et al. (2011) discuss the availability of a university hospital, but the hospitals in their study are meant to provide healthcare services and support to students, faculty members, and the entire university's staff. On the other hand, employers in this study assert that a university hospital is intended to enrich the training experiences of medical students. Employers have observed deficiencies in the clinical skills of graduates from universities without teaching hospitals. Although the majority of medical training in Saudi Arabia takes place in public hospitals, a hospital attached to a university is a key complement to public hospital training programs and to providing training opportunities for students across different study stages.

Although the computer literacy variable, as a quality attribute of medical graduates, was excluded from the analysis (see Section 8.3), employers viewed computer literacy as a quality measure of medical graduates. Medical workplace requirements have changed to favor computer literacy, in keeping with the Fourth Industrial Revolution. The literature review

suggests the necessity to develop graduates who are highly technically skilled (Al-Amri et al., 2020; Brown et al., 2007; Donnabhain & Friedman, 2018; Simpson et al., 2002; Zaini et al., 2011). Technological literacy ranges from the simple ability to deal with digitized medical records to being able to deal with innovative robotic techniques. This type of literacy will allow students to effectively practice medicine using innovative and technological techniques. Employers in this study strongly agree that keeping abreast of advances in medical equipment and technology through training is a quality measure of medical graduates. Although the SaudiMeds Framework emphasizes technological literacy for medical students (Zaini et al., 2011), traditional physical examination skills should not be neglected. Training students in traditional practical skills, in terms of providing a physical examination, is also a quality attribute from the perspective of employers. Neglecting this skill in medical education could lead to problems with ordering unnecessary, and sometimes harmful, tests and x-rays.

8.2.5 Scientific research and engagement

Scientific research and engagement are a quality dimension of medical education from the perspective of employers. This dimension includes scientific research productivity and community services conducted by universities. Similarly, Biloslavo and Bratoz (2013) found that the second important quality attribute of HE from the perspective of employers is the value chain dimension, which involves scientific research and community services. Indeed, universities in Saudi Arabia are obligated to actively engage in research studies and community service, as part of the NCAAA quality standards. The current study shows that employers believe that scientific research productivity is a quality attribute of medical education. Saudi Arabia is a leading country in medical research in the Arab world (Shehatta & Mahmood, 2016) and international collaboration in research with advanced countries such as the USA and UK is widely practiced (Haq et al., 2020). Similarly, employers assert that collaboration with hospitals and international institutions for conducting research studies underpins the quality of medical education. A number of studies in the literature showed that employers should only be involved in HE in the form of assisting with the design of curriculum and academic programs (Alshare & Sewailem, 2018; Iqbal & Zenchenkov, 2014; Swailes et al., 2012; Thomas et al., 2016), but while employers in this study agreed with these findings, they added research studies as a chance to create collaboration between hospitals and universities.

In addition to the faculty members' quality attributes discussed in the previous dimension (see Section 8.2.2), employers consider research productivity to be a sign of a high-quality faculty member, similar to the findings of Lagrosen et al. (2004). Employers assert that universities need a plan to develop the research skills of faculty members to demonstrate a high quality status. Additionally, universities' quality is linked to their ability to create an atmosphere that encourages creativity and innovation among students and faculty members, a finding supported by Allam (2020) and Damoah et al. (2021). Indeed, studies have shown that employers are not satisfied with the level of creativity and innovative skills of graduates (Collet et al., 2015; Direito et al., 2012). That being said, conducting research studies merely to please quality standards or management is worthless if the research is not being disseminated and publicly recognized. Research needs to be published in prestigious and high impact factor journals and shared in conferences in order to achieve its purpose, thus obtaining public recognition and demonstrating high quality levels.

Moreover, employers value universities that are engaged in and offer services to the community to which they belong. This could be in the form of health promotion campaigns, free examination services, or charity medical services. Employers perceive this practice as a quality indicator of medical education, as discussed by Lagrosen et al. (2004). Indeed, the provision of community services is critical in Saudi universities and frequently practiced. It is a necessary criterion to obtain accredited status, and to earn promotion and a higher academic rank for faculty members.

8.2.6 University reputation

It has been argued that reputation is linked to quality in HE (Abdullah, 2006; Akareem & Hossain, 2016; Joseph et al., 2005; LeBlanc & Nguyen, 1997; Sohail & Shaikh, 2004) and this also emerged in this study. In this study, employers perceive a university's reputation through five quality attributes, namely national academic accreditation, international academic accreditation, quality assurance systems, world ranking, and being a leading university.

Although academic accreditation has received significant criticism from faculty members (Alrebish et al., 2017; Anderson, 2007; Jones & Saram, 2005), this study shows that employers value national accreditation as a quality measure of medical education. Anderson (2007) argues that academic accreditation creates a burden for medical schools, particularly due to national accreditation systems (Alrebish et al., 2017). Indeed, the assumption that

academic accreditation improves the quality of medical education and patient care is problematic (Boulet & Zanten, 2014). Apart from the stress and burden created by accreditation, faculty members believe that working on the accreditation process distracts them from their actual role and harms their autonomy in teaching, since they are forced to comply with predetermined quality standards (Jones & Saram, 2005). Nonetheless, national accreditation is believed to create a sustainable improvement culture and to offer enhancement opportunities to medical schools (Alrebish et al., 2017). It has been proven that accreditation enhances the performance of graduates, particularly in medical license examinations (Davis & Ringsted, 2006; Roy et al., 2020). Alrebish et al. (2017) found that faculty members favor international accreditation over national accreditation due to its flexible systems. Employers perceive international accreditation as a quality measure of medical education. Roy et al. (2020) reveal that medical students' performance is significantly linked to accreditation. Although accreditation is considered a quality practice by employers in this study, an effective quality assurance and continuous evaluation system needs to be established in universities to maintain a high-quality performance. These systems need significant support from management, staff, faculty members, students, and other stakeholders to effectively achieve their optimal purpose and benefits. World ranking systems are another quality practice that has attracted strong interest from universities worldwide. These systems amplify the already competitive atmosphere at universities, given the competition between universities in attracting students and faculty members. Ranking systems also trigger initiatives to stay on track as leading universities. The higher the position of a university in the ranking system, the higher its quality level.

From the perspective of employers, the top three practices in a HEI to build a prestigious reputation are world ranking, accreditation status, and graduates' performance in the labor market. Although employers rated community service and the industry's involvement in HE as quality indicators of medical education (see section 8.2.2), they doubted the impact of these quality practices on the university's reputation. Nonetheless, the influence of graduates on reputation re-emphasizes the point that graduates' quality is key in medical education, from the perspective of employers. Preparing graduates to transit to employment and ensuring that they have acquired the attributes required by the labor market is part of the quality of medical education (see Section 8.3). Although Willis and Taylor (1999) doubt that graduates' performance in the labor market correlates with the performance of universities, a number of studies have shown that a university's reputation is linked to the performance of

graduates in the labor market (Hesketh, 2000; Shah et al., 2015; Sin et al., 2016). Indeed, Allam and Ahmad (2013) argue that the quality of HEIs could be measured through the performance of their graduates. The next section discusses the attributes of medical graduates that demonstrate high quality in the labor market from the perspective of employers.

8.3 Model of Quality of Medical Graduates

Among the different definitions of quality in HE available in the literature (see Chapter 1), Harvey and Green (1993) argue that employers view quality as fitness for purpose. This is because employers look for graduates who possess the attributes required by the labor market. Bendermacher et al. (2020) found that graduate attributes are a quality dimension of HE from the perspective of employers. Indeed, a study by Biloslavo and Bratoz (2013) revealed that the most important quality dimension in HE to employers is the outcome dimension: graduates. This thesis has established three dimensions to effectively measure the quality of medical graduates from the perspective of employers, namely employment readiness, medical comprehension, and research and engagement. These quality dimensions, together with the quality dimensions in medical education, combine to create the comprehensive quality model in medical education from the perspective of employers that is presented in Section 8.4.

Lindberg (2011) found that employers seek medical graduates who are both performance oriented and human oriented. Likewise, Brown et al. (2007) assert that graduates should be highly skilled and knowledgeable, as well as technically skilled. The three broad quality dimensions in this section were extracted using factor analysis, along with a wide range of quality variables. These dimensions and sub-dimensions are discussed and compared with the literature reviewed in Chapter 3 (see Sections 8.3.1, 8.3.2 and 8.3.3).

As a result of the factor analysis, a number of variables were excluded from the set of quality attributes of medical graduates from the perspective of employers (see Chapter 7). These quality variables were obtained from the interviews, but they did not correlate with other questionnaire items and were therefore dismissed. They pertain to student scholarships, English language proficiency, and computer literacy.

In contrast to Salina et al. (2011) and Gallagher et al. (2015), adequate English language proficiency is not deemed to be a quality attribute of medical graduates from the perspective of employers. This also contrasts with the contention of Telmesani et al. (2011), who claimed

that medical students encounter obstacles due to low English proficiency, and Randheer (2015), who believed that English proficiency enhances graduates' profile in the labor market. The English language variable did not appear under any of the extracted factors and was thus excluded from the proposed quality model. Indeed, this study suggests that employers do not perceive a lack of English language skills as a barrier in the medical field and they believe that English proficiency can be obtained in the workplace. In addition, although IT skills are a desired outcome of graduates (Shorfuzzaman & Alhussein, 2016) and they appeared in a number of medical outcome frameworks (Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Swing, 2007; Zaini et al., 2011), computer literacy was excluded from being a quality attribute of medical graduates, a finding consistent with previous research findings (e.g., Laidlaw, Guild & Struthers, 2009; Post et al., 2015; see also Section 8.2.4). Moreover, although students prefer to be trained locally (Alshahrani et al., 2015), employers wish to recruit graduates with international experience (Brown et al., 2007; Crossman & Clarke, 2010). However, scholarship opportunities were excluded from the proposed model, as they are not seen as a quality attribute by employers. Apart from these excluded attributes, the three extracted valid factors encompass a wide range of quality attributes to explain the quality of medical graduates from the perspective of employers. These are shown and discussed next.

8.3.1 Employment readiness

Medical employers believe that a high-quality medical graduate is one who is employment ready. Thus, the employment readiness dimension emerged as an element of the quality model (see Section 8.4). This dimension explains the quality attributes of medical graduates pertaining to their preparation for the medical labor market. This dimension was also identified as a quality attribute in the model developed by Abbas (2020). Abbas (2020) found that students not only want universities to prepare them for the labor market, but also to promote their graduates to help them find job opportunities. Specific to medical education, AlShammari et al. (2019) argue that medical graduates must be prepared for entrance into the medical labor market. The dimension includes being ready to assume responsibility and to pursue an appropriate career orientation. Employers believe that as part of preparing students for the labor market, universities need to deliver effective career orientation programs. This is similar to the findings of Abbas (2020), Ieli and Anil (2014), Noaman et al. (2017), Lagrosen et al. (2004), and Hossain and Hossain (2019). Although students underestimate career orientation and are not aware of how critical these programs are for their future employment

(Dicker et al., 2019), universities are responsible for preparing and equipping students with the required skills and competencies for the labor market through training, career and extra activities, and skills development programs, as per the employers.

The employers reveal that the medical labor market seeks to recruit confident and independent doctors who are able to handle all the responsibilities expected in their job, which is consistent with the findings of Lindberg (2011). Trainees in the workplace are seen as students who come to hospitals to learn, as well as actual employees who are expected to fulfill a role in the hospital (Chhinzer & Russo, 2018). This study shows that employers see sufficient medical work experience as a quality measure of medical graduates. This aligns with the findings of the Australian Industry Group (2009) and Post et al. (2015). However, Lindberg (2011) claims that a long period of work experience, particularly in one small clinic, could be interpreted as a lack of ambition to develop. Nonetheless, serious incidents are reported in hospitals at the start of residency programs due to a lack of student experience (Jen et al., 2009). Medical employers claim that opportunities for training/internships can be a substitute for work experience for medical students, as discussed by Post et al. (2015).

Similar to studies by Succi and Canovi (2020), Sin and Neave (2016), Branine (2008), Chhinzer and Russo (2018), and Dicker et al. (2019), employers in this study highly value the acquisition of soft skills as a quality attribute of medical graduates and this is linked to a better performance of graduates in the labor market (Griffin & Coelho, 2019; Shorfuzzaman & Alhussein, 2016; Thomas et al., 2016). A number of studies have found that communication skills are favored by medical employers (AlAnazi, 2012; AlShammari et al., 2019; Alshare & Sewailem, 2018; Kilner, 2004; Thomas et al., 2016; Williams, 2011). This soft skill is also emphasized by a number of competency frameworks (Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Zaini et al., 2011). Similarly, this study found that employers' second most favored soft skill as a quality attribute of medical graduates is communication skills, which are essential to help avoid potential malpractice (Levinson et al., 1997) or lawsuits (Ambady et al., 2002). Indeed, Matheson and Matheson (2009) assert that employers think that medical graduates do not possess adequate communication skills for the medical labor market. The Saudi employers in the current study also emphasized the importance of decision making, as discussed by O'Donnabhain and Friedman (2018) and Kilner (2004), and active learning skills, which is consistent with the needs of the modern labor market (World Economic Forum, 2016). Employers also favor

commitment to work, as discussed by Post et al. (2015); self-improvement, considered by Dicker et al. (2019) and Thomas et al. (2016); continuous learning, covered by Kilner (2004), Brooks and Everett (2008), Tomlinson (2012), Singh et al. (2013) and Saichaie and Morphey (2014); and confidence, as discussed by Makki et al. (2015). To the list of medical graduates' soft skills mentioned in the literature reviewed in Chapter 3, the employers in this study added time management and being able to work under pressure. Indeed, medical graduates felt unprepared for the medical labor market in terms of time management (Morrow et al., 2012). Mirza and Karolak (2019) published similar findings. This set of soft skills builds the personality of a graduate and makes them a better fit for the medical labor market.

Overall, the soft skills raised in this study strongly align with the SaudiMed Framework, which was constructed by academics (Zaini et al., 2011). The perspectives of academics and employers in Saudi Arabia are quite similar in terms of the essential soft skills that medical graduates should possess. That being said, the data gathered from employers in this study contradict the skills emphasized by the World Economic Forum (2016). This study shows that from the perspective of Saudi medical employers, complex problem solving, critical thinking, negotiation and cognitive flexibility are of little value. Most competency frameworks highlight professionalism as a desired outcome of medical graduates (Frank & Danoff, 2007; General Medical Council, 2018; Swing, 2007; Zaini et al., 2011), and only some of the employers in this study believe that professionalism is less important than the other soft skills required for the medical labor market. However, students do not recognize the necessity of these skills and why they are important (Green et al., 2009). Studies have shown that employers tend to rate students' acquisition of soft skills more than students do (Burchell, 2003; Damoah et al., 2021; Direito et al. 2012). This is perhaps because students are not fully aware of or understand what is best for them. Universities need to equip students with the necessary soft skills and explain why these soft skills are important.

Moreover, graduates' ability to train others is considered a quality attribute of medical graduates. Similarly, Alanazi (2012) found that medical employers seek candidates who possess teaching skills. The SaudiMeds and the Scottish Doctor frameworks also specify teaching as a desired skill of medical graduates (Simpson et al., 2002; Zaini et al., 2011). Moreover, employers identify being able to write a comprehensive curriculum vitae and job interview skills as quality attributes of medical graduates to prepare them for employment, as also claimed by Lindberg (2011).

8.3.2 Medical comprehension

The medical comprehension dimension emerged in this study to show the quality attributes of medical graduates pertaining to medical knowledge. It includes the employers' perspectives of their practical and theoretical backgrounds. In the available medical outcome frameworks (Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Zaini et al., 2011), there is no single domain to explain the medical knowledge and practice required of graduates, and instead these key attributes are categorized into multiple dimensions. In this study, a single dimension is dedicated to the medical comprehension that medical graduates are required to possess.

In contrast to the findings of Illing et al. (2013), who think that clinical skills can be taught in hospitals, the medical employers in this study contended that medical graduates of high quality are those who are clinically proficient. This is consistent with the findings of Horowitz (2006), AlAnazi (2012), Kilner (2004), and AlShammari et al. (2019), as well as CanMEDS, Outcomes for Graduates (formerly Tomorrow's Doctors), the Scottish Doctor, ACGME, and the SaudiMeds frameworks (Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Swing, 2007; Zaini et al., 2011). However, studies across the world provide evidence for the fact that students believe that they are not clinically prepared for the medical labor market (Armstrong et al., 2004; Cave et al., 2007; Goldacre et al., 2003; Langdale et al., 2003; Scheffer et al., 2004; Windish et al., 2004). Indeed, a study by Matheson and Matheson (2009) shows that employers are not satisfied with the level of practical and clinical skills of medical graduates. According to the findings of this study, a lack of preparation would negatively impact the quality of medical graduates.

Additionally, Velasco (2012) argues that employers seek to recruit the smartest graduates who have outstanding academic attainment. Similar to the findings of Lauder and Mayhew (2020), Lindberg (2011), and Kilner (2004), the medical employers in Saudi Arabia who participated in the current study favor a strong medical background, believing it to be a quality attribute of medical graduates. This aligns with the competency determined by CanMEDS, Outcomes for Graduates (formerly Tomorrow's Doctors), Scottish Doctor, ACGME, and the SaudiMeds frameworks (Frank & Danoff, 2007; General Medical Council, 2018; Simpson et al., 2002; Swing, 2007; Zaini et al., 2011). The studies by Carr et al. (2014) and Salem et al. (2016) have shown that GPA scores can predict clinical performance. However, Tomlinson (2012) and Lindberg (2011) argue that outstanding academic

achievement is not sufficient on its own to identify high-quality graduates. Lindberg (2011) claims that all medical graduates have been through medicine studies and earned a medical degree, but they need to demonstrate more than that, for example performance and social skills.

As part of preparing medical graduates practically and theoretically, a new quality attribute emerged in this dimension. Employers assert that graduates' ability to deal with patients with special needs is a quality attribute, although only a limited number of healthcare providers offer special services for patients with special needs (Delucia & Davis, 2009; Fenton et al., 2003). Moreover, a number of studies have shown that students are not sufficiently prepared for treating patients with special needs (Alumran et al., 2018; Fenton et al., 2003; Waldman & Perlman, 2002). Indeed, failing to deliver proper treatment could cause unforeseen complications, thereby increasing the cost burden on healthcare services. However, employers in this study believe that medical graduates must possess the ability to deal with patients with special needs.

To conclude, employers in this study contend that a sound medical and clinical background is a quality attribute of medical graduates, similar to the existing literature (e.g. Branine, 2008; Chhinzer & Russo, 2018; Dicker et al., 2019; Lindberg, 2011). In line with the findings of this study, O'Donnabhain and Friedman (2018), Kilner (2004), and Simpson et al. (2002) assert that medical graduates must be able to integrate practical/clinical skills and medical knowledge to make correct clinical decisions and demonstrate quality.

8.3.3 Research and engagement

Research productivity and community engagement emerged as a quality dimension from the perspective of employers in this study. Indeed, the CanMEDS framework has a separate domain for research studies (Frank & Danoff, 2007), as does the SaudiMeds framework for involvement in the community (Zaini et al., 2011). Similar to the findings of Al-Amri et al. (2020), the employers in this study asserted that one of the quality attributes of students is being able to learn in several different ways, such as through scientific research, conferences and community service. Community service helps students to be more confident, especially when dealing with patients. In addition, as medicine is a dynamic science that needs constant study, research skills are essential to enable graduates to stay abreast of developments. This correlates with the quality attributes of graduates in the literature and in competency frameworks that highlight the necessity of research skills (Alanazi, 2012; Frank & Danoff,

2007; Simpson et al., 2002; Workplace Research Centre, 2014; Zaini et al., 2011) and involvement in the community (Brown & Hesketh, 2004; Lindberg, 2011; Zaini et al., 2011). Moreover, employers confirm that participating in academic events and conferences is a quality attribute of medical graduates, aligned with the findings of Lindberg (2011). Additionally, employers perceive voluntary work a quality attribute of medical graduates, similar to the findings of Brown and Hesketh (2004) and Lindberg (2011).

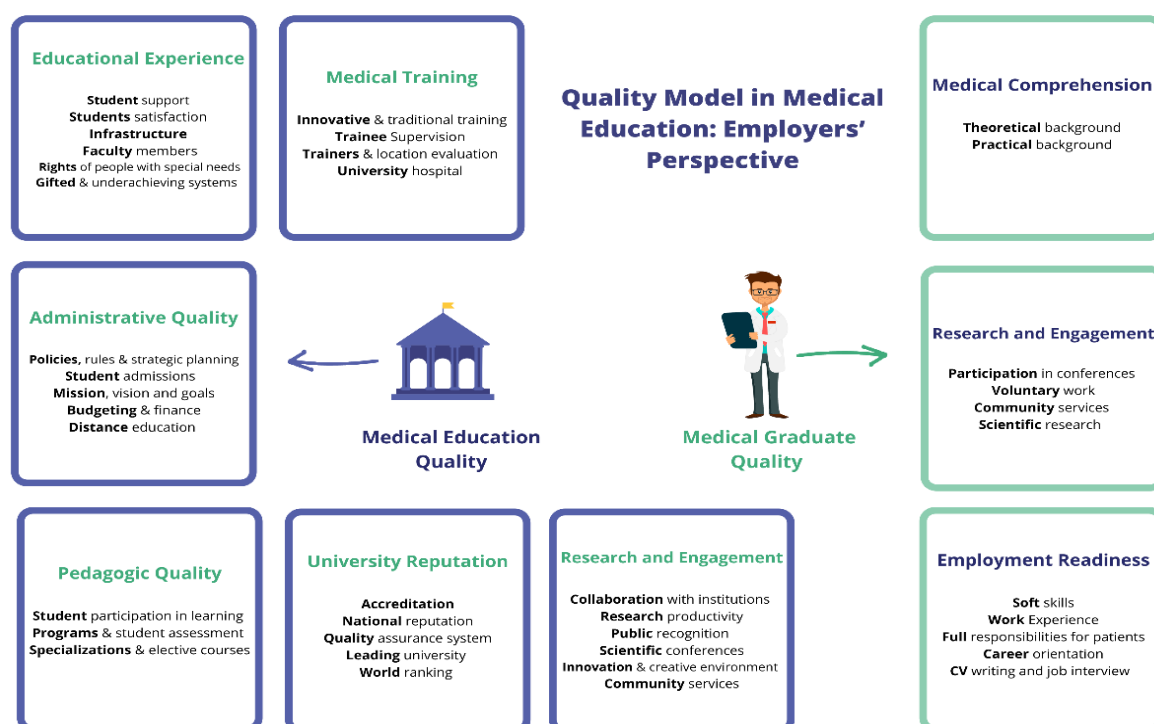
In conclusion, these quality attributes should be common among medical graduates, thus graduates must work to prove they possess these required attributes and perform better than others in order to compete in the labor market. A higher level of attainment of these attributes could lead to higher chances on the labor market. Clarke (2017) believes that graduates must achieve a balance of academic attainment and soft skills, which is consistent with the perspective of employers in this study. Similarly, this study concludes that hospitals try to recruit graduates who are able to deal effectively with patients and work in harmony. Indeed, theoretical knowledge could be developed through training and practice, whereas the personalities of medical candidates are quite difficult to alter in the workplace.

8.4 The Model of Quality in Higher Education: Employers' Perspective

This study proposes a quality model of medical education from the perspective of medical employers in Saudi Arabia. This comprehensive model contains two primary parts, the quality of medical education and the quality of medical graduates. Each part breaks down into several dimensions and sub-dimensions, as shown below. These dimension and sub-dimension are also illustrated in Figure 21.

Figure 21

The Quality Model of Medical Education from the Perspective of Employers in Saudi Arabia



1) Medical Education Quality: the quality attributes that define a high-quality medical education from the perspective of medical employers:

1.1 Educational Experience: this includes the university providing student academic and psychological support services, student satisfaction evaluations, infrastructure, facilities, high-quality faculty members, rights for students with special needs, and systems to identify gifted and talented students.

1.2 Medical Training: this includes universities ensuring that the medical training experience includes training on innovation and traditional techniques and equipment, a trainee supervision system, trainers and location evaluations, and a university hospital.

1.3 Scientific Research and Engagement: this includes universities adhering to practices of international research collaboration, hospital research collaboration, a development plan for faculty members' research skills, public research recognition, scientific conferences, an environment for creativity and innovation, and community service.

1.4 University Reputation: this includes universities earning national and international accreditation, and a sound reputation, providing quality assurance systems, and being a leader in world rankings.

1.5 Pedagogic Quality: this includes universities ensuring that students participate fully in their learning, and providing program design and student assessment policies and procedures, and a wide range of specializations and courses.

1.6 Administrative Quality: this includes universities establishing policies and a strategic plan, student admission policies, a mission, vision and goals, budgeting and finance systems, and distance education.

2) Medical Graduates' Quality: the quality attributes that define a high-quality medical graduate from the perspective of medical employers:

2.1 Employment Readiness: this includes students who have undergone comprehensive training and work experience, and who are able to take full responsibility for patients, write a CV, perform well in job interviews, and participate in career orientation programs.

2.2 Medical Comprehension: this includes students who possess a sound medical theoretical and practical background, and are able to deal with patients with special needs.

2.3 Research and Engagement: this includes students who have participated in conferences, community services, scientific research, and voluntary work.

To conclude, the ultimate outcome of this study is illustrated in Figure 21. The figure shows the proposed quality model of medical education, containing all the quality dimensions of medical education and medical graduates, along with their corresponding quality attributes, from the viewpoint of medical employers in Saudi Arabia. The practical outcome of this study is a proposed comprehensive quality model in medical education, although more research work is needed to test the validity of this model (see Section 8.4.3).

8.4.1 Implications of the study

The study has several theoretical and practical implications for the literature and the management of HEIs. Given the lack of understanding of employers' perspectives of quality in medical education (AlAamri et al., 2020), theoretically this study helps to bridge this gap in the literature. The study will in particular fill the gap in the literature on the quality perceptions of different stakeholders in HE, as the majority of extant quality models in the literature have been developed from the perspective of students and/or faculty members (see Chapter 3), rather than from the viewpoint of other stakeholders. The study sheds light on the perspective of an overlooked group of stakeholders in HE: employers. The study also shows

that whilst there are agreements between employers and faculty members about some measures of quality in HE, there are also some differences in their conceptualizations of quality that might need to be taken into account, as seen earlier in this chapter (see Sections 8.2 and 8.3 and subsections; also see Chapters 5 and 6).

Practically, this study is original in providing a quality model of medical education, specifically as limited work has been done in this area in the literature. It is anticipated that the quality model proposed in this study will fill the gap in the literature in conceptualizing quality in HE and in medical education, particularly in Saudi Arabia. The literature contains a limited number of models consisting of the non-academic aspects of HE (Abdullah, 2006), unlike the current model, which captures a comprehensive perception of quality. Moreover, as seen in this chapter (see Sections 8.2 and 8.3 and subsections), the findings of several previous studies of quality models correlate with the findings of the current study. In addition, in comparison with the quality models available in the literature (see Chapter 3), this study concluded a novel and unique quality dimension pertaining to medical training and internship programs for the medical education quality model, as presented in Figure 21. This was possibly because the medical discipline was specifically targeted when developing the quality model.

The model in Figure 21 provides a starting point and guideline for the managers of HEIs to enhance and develop medical education to overcome the deficiencies that currently result in graduates who are less competent than the labor market demands. This model could be used to measure the satisfaction of medical employers with the quality level of universities in Saudi Arabia. Additionally, it will provide possibilities for HEIs to understand the evolving needs of medical employers. This understanding will ensure alignment between the labor market and HE and increase employment rates among medical graduates.

Moreover, the results of this study, particularly pertaining to the quality attributes of medical graduates (the second research question), can be used to design and develop a competency-based curriculum. Although a competency-based curriculum has already been adopted in Saudi Arabia, the curriculum is based on the perspectives of academics. On the other hand, this study adds a varied perspective to expand the scope of the perceptions and integrate them with existing frameworks to develop a more comprehensive approach. The proposed model shows the exact competencies and skills required by medical employers in graduates; therefore if followed, it would result in more employable graduates. Thus, the model can

contribute to the design and enhancement of a competency-based curriculum that aligns with the needs of the labor market. Subsequently, the proposed model could be used to assess and measure the actual skills and competencies possessed by medical graduate for comparison against the needs of the labor market. This model can provide evaluation criteria based on the needs of employers demonstrated in the model. This comparison will elucidate any significant differences between the skills perceived as important by employers and the proficiency of graduates in the same skills and competencies.

Additionally, although this study has been designed to fit the context of Saudi Arabia, the proposed model could be beneficial to any other country worldwide. In spite of the fact that globalization is trending in HE, the intention is to prepare graduates who are able to compete with their peers internationally. Understanding how the medical employers in Saudi Arabia conceptualize the required quality of the medical educational experience and medical graduates, along with the existing literature worldwide, would result in a greater understanding of these requirements across the world. This would help to develop a broader perception of the quality of medical educational experiences that is required in order to prepare a medical graduate who is competitive worldwide.

8.4.2 Limitations of the study

Extensive work was dedicated to designing, planning, and conducting this study; however, like all studies, it has several limitations. The first limitation in this study is that it targets medical employers' perspectives for the development of the quality model. Thus, the scope in this study is very limited to audiences in the medical field only. Future research should broaden the scope of the model and target employers from a wide variety of disciplines to expand the suitability of the quality model to HE in general.

The other limitation is that this study targets the perspective of employers in Saudi Arabia only. Although education tends to be quite country specific, the recent trend of globalization in HE cannot be ignored. Globalization has created chances for graduates across the world to compete in the worldwide labor market (see Chapter 1). Although it may not be feasible or effective to reach employers worldwide, capturing the perspective of employers from different countries, especially developed countries, would generate an informative quality model that would contribute to enhancing HE systems and preparing graduates to compete worldwide, regardless of which country they are based in.

8.4.3 Recommendations for future research

Despite the huge amount of work dedicated to the development of a valid quality model in medical education from the perspective of employers, as this quality model is new, further studies are needed to test, complement, and support the findings of this study (see Section 8.4.2). Researchers could approach medical employers to capture their views about the proposed quality model to further test its validity. This could be done by conducting interviews or focus groups. Moreover, studies could go beyond the medical discipline to different disciplines to determine the extent to which the model proposed in this study fits other disciplines.

Additionally, to benefit medical education managers, a study could be conducted to turn the model in this study into a hierarchal structure model to understand the priorities of employers when conceptualizing the quality of medical education and graduates. A hierarchical quality model would provide insights into whether some quality attributes were more important than others, in the views of employers. Indeed, the findings of the questionnaire in this study could be used to develop a hierarchal model using the Analytical Hierarchy Process (AHP) and following the approach of Saaty (2001), Tsiniidou, Gerogiannis, and Fitsilis (2010).

Moreover, further research could also compare the perspectives of academics and employers on quality in HE to measure how much they vary. Capturing the opinions of academics about the proposed model (in Figure 21) would allow researchers to detect any gaps and similarities between their views and the views of employers. This would provide valuable information about how the performances of universities align with the expectations of the labor market.

Additionally, the originality of this study lies in specifically capturing the perspective of medical employers to build the quality model of medical education. It would also be useful to complement this study with perspectives from stakeholders that have not yet been addressed in the literature. Patients, for example, are a unique stakeholder group in medical education as users of the system and they are therefore directly affected by the quality of medical graduates. Further study could capture the perspectives of patients on the quality of medical education and graduates.

The emergence of the COVID-19 pandemic in 2019 has created numerous opportunities for further studies. Although this study has shown that distance education is a quality attribute in medical education, an in-depth exploration of the quality of distance and online education

remains a desideratum. Possibly, a unique and separate quality model can be developed for distance education.

Of course, many other opportunities for future research remain and will continue to come to light. Each new study complements the literature while itself creating opportunities for further research. The ongoing process of research is what builds the literature, creates knowledge and triggers further questions for future work.

Finally, it has been proven that the higher the quality of services delivered by universities, the greater students' satisfaction (Mahmood et al., 2014) and the better their performance (Jupiter et al., 2017). This study adds to the literature a focused overview of what makes high-quality medical education and graduates, from the perspective of employers. In order to provide high-quality medical education, universities need to focus on students' educational experience, administrative services, medical training, scientific research and engagement with the community, pedagogy, and university reputation. Moreover, high-quality medical graduates are perceived as being outstanding in the areas of employment readiness, medical comprehension, and research and engagement with the community. The more satisfied employers are, the more graduates are likely to be recruited for employment.

8.5 Conclusion

Given the gap in the literature about employers' perspective of the quality of medical education (AlAamri et al., 2020; see Chapter 3), this study aimed to develop insights into how medical employers conceptualize the quality of medical education and graduates in Saudi Arabia. The objective of the study was to develop and present a new comprehensive quality model of medical education from the perspective of medical employers working at public and private hospitals in Saudi Arabia. This research answers the following two research questions:

1. How do medical employers conceptualize quality of medical education?
2. What are the quality attributes that make an excellent medical graduate, from the perspective of medical employers?

To answer these research questions, a mixed-method study with an exploratory design was conducted in Saudi Arabia. This study was conducted in two stages: semi-structured interviews followed by a survey. Fourteen employers from five hospitals participated in the interviews. The aim was to identify the main quality attributes of medical education,

educational experiences and attributes that employers seek in medical graduates in Saudi Arabia. After a successful completion of the interview phase, a questionnaire was designed based on the literature review and the interview findings. The sample size for the survey phase was 251 participants. All of the participants were physicians working at hospitals across Saudi Arabia.

The study revealed six dimensions for the quality of medical education: 1) Educational Experience, 2) Medical Training, 3) Scientific Research, 4) University Reputation, 5) Pedagogy Quality, and 6) Administrative Quality. The study also revealed three dimensions for the quality of medical graduates: 1) Employment Readiness, 2) Medical Comprehension, and 3) Research and Engagement. These quality dimensions of medical education and graduates are the elements that underpin the proposed quality model of medical education from the perspective of employers in Saudi Arabia (see Figure 21 in Section 8.4).

REFERENCES

- Abbas, J. (2020). HEISQUAL: A modern approach to measure service quality in higher education institutions. *Studies in Educational Evaluation*, 67. <https://doi:10.1016/j.stueduc.2020.100933>
- Abdullah, F. (2006). The development of HEdPERF: a new measuring instrument of service quality for the higher education sector. *International Journal of Consumer Studies*, 30(6), 569-581. <https://doi: 10.1111/j.1470-6431.2005.00480.x>
- Abels, G., & Behrens, M. (2009) Interviewing experts in political science: A reflection on gender and policy effects based on secondary analysis. In B. Alexander, L. Beate, & M. Wolfgang (Eds.), *Interviewing Experts* (pp. 138-56). Basingstoke: Palgrave Macmillan.
- Accreditation CoD (2004). *Accreditation standards for dental education programs*. Chicago: American Dental Association.
- ACGME (2001). *Program requirements for residency training in internal medicine/educational program/conferences and seminars*. Chicago, IL. Accreditation Council for Graduate Medical Education. Retrieved from: <http://www.acgme.org/req/140pr701.asp#edu>.
- Agus, A., Awang, A. H., Yussof, I., & Mohamed Makhbul, Z. K. (2011). The gap analysis of graduate employees' work skills in Malaysia. *Proceedings of Business and Information*, 8, 15.
- Ahmed A. M. (2002). Deficiencies of history taking among medical students. *Saudi Medical Journal*, 23, 991-99.
- Ajina, A. S., Alkhateeb, T. T., Alkhateeb, Y., & George, S. (2020). Marketability dimensions of university graduates for various professions in Saudi Arabia: A study of Alkharj Governorate. *TEST Engineering and Management*, 82, 3321-3330.
- Akareem, H. S., & Hossain, S. S. (2016). Determinants of education quality: What makes students' perception different? *Open Review of Educational Research*, 3(1), 52-67. <https://doi.org/10.1080/23265507.2016.1155167>
- AlAamri, A., Jani, R., & Zubairi, Y. (2020). A review of models and techniques used to gauge quality in higher education. *PONTE International Scientific Research Journal*, 76(1). <https://doi: 10.21506/j.ponte.2020.1.15>
- AlAmri, A., Mathew, P., Zubairi, Y., & Jani, R. (2020). Optimal standards to measure the quality of higher education institutions in Oman: Stakeholders' perception. *SAGE Open*, 10(3). <https://doi.org/10.1177/2158244020947440>
- Alanazi, A. (2012). Curriculum design of emergency medical services program at the College of Applied Medical Sciences, King Saud bin Abdulaziz University for Health Sciences. *Advances in Medical Education and Practice*, 3, 7-18.
- AlAsfour, A. & Khan, SA. (2013). Workforce localization in the Kingdom of Saudi Arabia: issues and challenges. *Human Resource Development International*, 17(2), 243-253.
- Albaqami, S. (2015). Implementing quality assurance in Saudi Arabia: A comparison between the MESO and the MICRO levels at PSU. *Higher Education Studies*, 5(3), 66-81.
- Albejaidi, F., & Nair, K. S. (2019). Building the health workforce: Saudi Arabia's challenges in achieving Vision 2030. *The International Journal of Health Planning and Management*, 34(4), e1405-e1416. <https://doi.org/10.1002/hpm.2861>

- Ali, F., Zhou, Y., Hussain, K., Nair, P. K., & Ragavan, N. A. (2016). Does higher education service quality effect student satisfaction, image and loyalty? A Study of international students in Malaysian public universities. *Quality Assurance in Education*, 24(1), 70-94.
<https://doi.org/10.1108/QAE-02-2014-0008>
- Al-Kibsi, G., Woetzel, J., Isherwood, T., Khan, J., Mischke, J., & Noura, H. (2015). *Saudi Arabia beyond oil: The investment and productivity transformation*. McKinsey Global Institute. Retrieved from:
<https://www.mckinsey.com/.../McKinsey/Global%2520Themes/.../Moving%2520>
- Allam, Z. (2020). Demystifying the aspect of quality in higher education: Insights from Saudi Arabia. *SAGE Open*, 10(1). <https://doi:10.1177/2158244019899057>
- Allam, Z., & Ahmad, S. (2013). An empirical study of quality in higher education in relation to stakeholders' perspectives. *Journal of American Science*, 9(12), 387-401.
- Allam, Z. & Malik, A. (2020). Exploring the predictors of student satisfaction: A case of Undergraduate Business School in Kingdom of Saudi Arabia. *Universal Journal of Educational Research*, 8(11B), 5760-5767. <https://doi: 10.13189/ujer.2020.082210>
- Alnamlah, Y. (2016). *University Major, Career and Skills*. Retrieved from:
<https://yousefalamlah.wordpress.com/>
- Alrebish, S. A., Jolly, B. C., & Molloy, E. K. (2017). Accreditation of medical schools in Saudi Arabia: A qualitative study. *Medical Teacher*, 39(sup1), S1-S7.
<https://doi:10.1080/0142159X.2016.1254746>
- Alsaleh, G. (2016). Do the standards of the National Commission for Academic Accreditation & Assessment (NCAAA) lead to organization excellence? *European Scientific Journal*, 12(34).
- Alshahrani, M., Dhafery, B., Al Mulhim, M., Alkhadra, F., Al Bagshi, D., & Bukhamsin, N. (2015). Factors influencing Saudi medical students and interns' choice of future specialty: a self-administered questionnaire. *Advances in Medical Education and Practice*, 5, 397-402.
<https://doi:10.2147/AMEP.S69152>
- AlShammari, T., Jennings, P. A., & Williams, B. (2018). Emergency medical services core competencies: A scoping review. *Health Professions Education*, 4(4), 245-258.
<https://doi.org/10.1016/j.hpe.2018.03.009>.
- Alshare, K., & Sewailem, M. F. (2018). A gap analysis of business students' skills in the 21st century: A case study of Qatar. *Academy of Educational Leadership Journal*, 22(1), 1-22.
- AlShehri, A. (2012). Quality management and medical education in Saudi Arabia. In K. Ng (Ed.), *Quality Management and Practices*. (pp. 76-86). Rijeka: InTech.
- Al-Shehri M.Y., Campbell S., Daud M.Z., Mattar E.H., Sayed M.G., & Abu-Eshy S.A. (2013). Development of medical education in Saudi Arabia. In L. Smith, & A. Abouammoh (Eds.), *Higher Education in Saudi Arabia. Higher Education Dynamics* (pp. 137-149). Dordrecht: Springer. https://doi.org/10.1007/978-94-007-6321-0_13
- Altemani, A. H., & Merghani, T. H. (2017). The quality of the educational environment in a medical college in Saudi Arabia. *International Journal of Medical Education*, 8, 128-132.
- Alumran, A., Almulhim, L., Almolhim, B., Bakodah, S., Aldossary, H., & Alakrawi, Z. (2018). Preparedness and willingness of dental care providers to treat patients with special needs.

Clinical, Cosmetic and Investigational Dentistry, 10, 231-236.
<https://doi.org/10.2147/CCIDE.S178114>

- AlWattan (2018). *11 reasons for the unemployment of health-profession graduates*. Retrieved from: <https://www.alwatan.com.sa/article/370019>
- Amaral, A., & Rosa, M. J. (2010). Recent trends in quality assurance. *Quality in Higher Education*, 16(1), 59-61.
- Ambady, N., LaPlante, D., Nguyen, T., Rosenthal, R., Chaumeton, N., & Levinson, W. (2002). Surgeons' tone of voice: A clue to malpractice history. *Surgery*, 132(1), 5-9.
<https://doi.org/10.1067/msy.2002.124733>
- Anderson, G. (2007). Assuring quality/resisting quality assurance: Academics' responses to 'quality' in some Australian universities. *Quality in Higher Education*, 12(2), 161-173.
<https://doi.org/10.1080/13538320600916767>
- Andrews, J., & Higson, H. (2010). Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study. *Higher Education in Europe*, 33(4), 411-422.
<https://doi.org/10.1080/03797720802522627>
- Annamdevula, S., & Bellamkonda, R. S. (2012). Development of HiEdQUAL for measuring service quality in Indian higher education sector. *International Journal of Innovation, Management and Technology*, 3(4), 412.
- Arabian Business (2018). How many unemployed health practitioners are there? Retrieved from: <http://arabic.arabianbusiness.com/content/333580>
- Archer, W., & Davison, J. (2008). *Graduate employability: What do employers think and want?* The Council for Industry and Higher Education. Retrieved from: <http://www.cihe-uk.com>
- Armstrong, E., Mackey, M., & Spear, S. (2004). Medical education as a process management problem. *Academic Med*, 79(8), 721-728.
- Asif, M., Usman Awan, M., Khalid Khan, M., & Ahmad, N. (2013). A model for total quality management in higher education. *Quality & Quantity*, 47(4), 1883-1904.
- Asma, A. & Lim, L. (2000). Cultural dimensions of Anglos, Australians and Malaysians. *Malaysian Management Review*, 36(2), 1-17.
- Astin, A. W. (1980). When does a college deserve to be called high quality? *Current issues in Higher Education: Improving Teaching and Institutional Quality*, 2(1), 1-9.
- Atef, T., & AlBalushi, M. (2017). Omani tourism and hospitality students' employment intentions and job preferences: ramifications on Omanization plans. *Quality Assurance in Education*, 25(4), 440-461. <https://doi.org/10.1108/QAE-04-2016-0022>
- Australian Industry Group (2009). *Skilling business in tough times*. Retrieved from: <http://hdl.voced.edu.au/10707/98810>
- Awan, U., Kraslawski, A., & Huiskonen, J. (2017). Understanding the relationship between stakeholder pressure and sustainability performance in manufacturing firms in Pakistan. *Procedia Manufacturing Elsevier B.V.*, 11, 768-777.
- Awang, Z. (2012). *A handbook on structural equation modelling using AMOS*. Malaysia: Universiti Teknologi MARA Press.

- Bajammal, S., Zaini, R., Abuznadah, W., Al-Rukban, M., Aly, S. M., Boker, A., ... & Donnon, T. (2008). The need for national medical licensing examination in Saudi Arabia. *BMC Medical Education*, 8(1), 1-15. <https://doi.org/10.1186/1472-6920-8-53>
- Bamwesiga, P. M. (2013). A conceptual understanding of employability: The employers' view in Rwanda. *Journal of Adult and Continuing Education*, 19(1), 39-56.
- Barnett, R. (1992). *Improving higher education: Total Quality Care*. London: Society for Research into Higher Education.
- Barnett, R. (1994). *The limits of competence*. Buckingham: Open University Press/SRHE.
- Becket, N., & Brookes, M. (2008). Quality management practice in higher education – what quality are we actually enhancing? *The Journal of Hospitality, Leisure, Sport and Tourism*, 7(1), 40-54.
- Bell, J., & Waters, S. (2014). *Doing your research project. A guide for first-time researchers* (6th ed.). Berkshire: Open University Press.
- Belwal, R., Priyadarshi, P., & Al Fazari, M., H. (2017). Graduate attributes and employability skills: Graduates' perspectives on employers' expectations in Oman. *International Journal of Educational Management*, 31(6), 814-827. <https://doi.org/10.1108/IJEM-05-2016-0122>
- Bendermacher, G. W. G., De Grave, W. S., Wolfhagen, I., Dolmans, D., & Oude Egbrink, M. G. A. (2020). Shaping a culture for continuous quality improvement in undergraduate medical education. *Academic Medicine*, 95(12), 1913-1920. <https://doi:10.1097/ACM.0000000000003406>
- Bhowmik, M., Roy, B. B., & Banerjee, J. (2013). Role of pedagogy in effective teaching. *Basic Research Journal of Education Research and Review*, 2(1), 1-5.
- Bloomberg, L., & Volpe, M. (2016). *Completing your qualitative dissertation. A road map from beginning to end* (3rd ed.). California: SAGE Publications.
- Blouin, D., & Tekian, A. (2018). Accreditation of medical education programs. *Academic Medicine*, 93(3), 377-383. <https://doi: 10.1097/acm.0000000000001835>
- Boddy, C. (2016). Sample size for qualitative research. *Qualitative Market Research: An International Journal*, 19(4), 426-432. <https://doi: 10.1108/qmr-06-2016-0053>
- Bogner, A., Littig, B. & Menz, W. (2018). Generating qualitative data with experts and elites. In *The Sage handbook of qualitative data collection* (pp. 652-665). London: SAGE Publications Ltd, <https://dx.doi.org/10.4135/9781526416070>
- Bolton, R. N., & Drew, J. H. (1991a). A multistage model of customers' assessments of service quality and value. *Journal of Consumer Research*, 17(4), 375-384.
- Bolton, R. N., & Drew, J. H. (1991b). A longitudinal analysis of the impact of service changes on customer attitudes. *Journal of Marketing*, 55(1), 1-9.
- Boulding, W., Kalra, A., Staelin, R., & Zeithaml, V.A. (1993). A dynamic process model of service quality: From expectations to behavioural intentions. *Journal of Marketing Research*, 30, 7-27. <http://dx.doi.org/10.2307/3172510>
- Boulet, J., & van Zanten, M. (2014). Ensuring high quality patient care: The role of accreditation, licensure, specialty certification and revalidation in medicine. *Medical Education*, 48, 75-86. <https://doi.org/10.1111/medu.12286>

- Boyatzis, R., E. (1998) *Transforming qualitative information: thematic analysis and code development*. London: SAGE Publications Ltd.
- Branine, M. (2008). Graduate recruitment and selection in the UK: a study of the recent changes in methods and expectations. *Career Development International*, 13(6), 497-513. <https://doi.org/10.1108/13620430810901660>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Brinkmann, S., & Kvale, S. (2018). *Doing interviews* (2nd ed.). London: Sage Publications Ltd.
- Brooks, R., & Everett, G. (2008). The predominance of work-based training in young graduates' learning. *Journal of Education and Work*, 21(1), 61-73.
- Brown, J., Chapman, T., & Graham, D. (2007). Becoming a new doctor: a learning or survival exercise? *Medical Education*, 41(7), 653-660. <https://doi.org/10.1111/j.1365-2923.2007.02785.x>
- Brown, P., & Hesketh, A. J. (2004). *The mismanagement of talent: Employability and jobs in the knowledge-based economy*. Oxford: Oxford University Press.
- Browne, B. A., Kaldenberg, D. O., Browne, W. G., & Brown, D. J. (1998). Student as customer: Factors affecting satisfaction and assessments of institutional quality. *Journal of Marketing for Higher Education*, 8(3), 1-14.
- Bryman, A. (2001). *Social research methods*. Oxford: Oxford University Press.
- Bryman, A., & Cramer, D. (1997). *Quantitative data analysis with SPSS for Windows: A guide for social scientists*. New York: Routledge.
- Campell, C., & Rozsnyani, C. (2002). *Quality assurance and the development of course programs, papers on higher education*. Bucharest: UNESCO-CEPES.
- Carman, J.M. (1990). Consumer perceptions of service quality: an assessment of the SERVQUAL dimensions. *Journal of Retailing*, 66, 33-55.
- Carr, S., Celenza, A., Puddey, I., & Lake, F. (2014). Relationships between academic performance of medical students and their workplace performance as junior doctors. *BMC Medical Education*, 14(1). <https://doi.org/10.1186/1472-6920-14-157>
- Cassidy, T., & Miller, M. (2002). Higher education in the Arab states: Responding to the challenges of globalization (Unpublished PhD thesis). Harvard University, Cambridge, MA.
- Cate, O., & Scheele, F. (2007). Competency-based postgraduate training: Can we bridge the gap between theory and clinical practice? *Academic Medicine*, 82, 542-547. <https://doi.org/10.1097/ACM.0b013e31805559c7>
- Cave, J., Goldacre, M., Lambert, T., Woolf, K., Jones, A., & Dacre, J. (2007). Newly qualified doctors' views about whether their medical school had trained them well: questionnaire surveys. *BMC Medical Education*, 7, 38. <https://doi.org/10.1186/1472-6920-7-38>
- CBAHI (2018). *About Us*. Saudi Central Board for Accreditation of Healthcare Institutions. Retrieved from: <https://portal.cbahi.gov.sa/english/about-us/cbahi-at-a-glance#:~:text=The%20Saudi%20Central%20Board%20for,as%20a%20non%2Dprofit%20organization>

- Chapman, R., Coll, R. K., & Meech, K. (1999). Service quality of a cooperative education program: Employers' perspective. *Journal of Cooperative Education*, 34(1), 17.
- Cheng, M. (2016). *Quality in higher education: Developing a virtue of professional practice*. The Netherlands: Sense Publishers.
- Chevalier, A. (2003). Measuring over-education. *Economica*, 70(279), 509-531.
- Chhinzer, N., & Russo, A. (2018). An exploration of employer perceptions of graduate student employability. *Education + Training*, 60(1), 104-120. <https://doi.org/10.1108/ET-06-2016-0111>
- Chhon-Huat Koh, G., Khoo, H., Wong, M., & Koh, D. (2008). The effects of problem-based learning during medical school on physician competency: a systematic review. *Canadian Medical Association Journal*, 178, 34-41.
- Chong, Y. S., & Ahmed, P. K. (2015). Student motivation and the 'feel good' factor: An empirical examination of motivational predictors of university service quality evaluation. *Studies in Higher Education*, 40(1), 158-177.
- Choudhury, K. (2015). Evaluating customer-perceived service quality in business management education in India: A study in TOPSIS modeling. *Asia Pacific Journal of Marketing and Logistics*, 27(2), 208-225. <https://doi.org/10.1108/APJML-04-2014-0065>
- Ciappei, C., & Cinque, M. (2014). *Soft Skills per il Governo Dell'agire*. Milano: Franco Angeli.
- Clarke, M. (2017) Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 43(11), 1923-1937.
- Cohen, L., Manion, L. & Morrison, K. (2002). *Research methods in education*. New York: Routledge.
- Collet, C., Hine, D., & Du Plessis, K. (2015). Employability skills: Perspectives from a knowledge-intensive industry. *Education + Training*, 57(5), 532-559.
- Coulter, A., & Fitzpatrick, R. (2000). The patient's perspective regarding appropriate health care. In G. L. Albrecht, R. Fitzpatrick, & R. C. Scrimshaw (Eds.), *The Handbook of Social Studies in Health and Medicine* (pp. 454-64). London: Sage.
- Cox, S., & King, D. (2006). Skill sets: An approach to embed employability in course design. *Education and Training*, 48(4), 262-274.
- Cranmer, S. (2006). Enhancing graduate employability: Best intentions and mixed outcomes. *Studies in Higher Education*, 31(2), 169-184.
- Creswell, J., & Clark, V. (2017). *Designing and conducting mixed methods research* (3rd ed.). California: SAGE Publications.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281-302.
- Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *Journal of Marketing*, 56(3), 55-68.

- Crosby, P.B. (1979). *Quality is free*. New York, NY: McGraw Hill.
- Crossman, J. E., & Clarke, M. (2010). International experience and graduate employability: stakeholder perceptions on the connection. *Higher Education*, 59(5), 599-613. <https://doi:10.1007/s10734-009-9268-z>
- Crouch, M., & McKenzie, H. (2006). The logic of small samples in interview-based qualitative research. *Social Science Information*, 45(4), 483-499.
- Damoah, O. B. O., Peprah, A. A., & Brefo, K. O. (2021). Does higher education equip graduate students with the employability skills employers require? The perceptions of employers in Ghana. *Journal of Further and Higher Education*, 45(10), 1311-1324. <https://doi:10.1080/0309877x.2020.1860204>
- Daud, S., Abidin, N., & Sapuan, N. M. (2011). Enhancing university business curriculum using an importance-performance approach. *International Journal of Educational Management*, 25(6), 545-569.
- Davis, D. J., & Ringsted, C. (2006). Accreditation of undergraduate and graduate medical education: How do the standards contribute to quality? *Advances in Health Sciences Education Theory and Practice*, 11, 305-313. <https://doi.org/10.1007/s10459-005-8555-4>
- De La Harpe, B., Radloff, A., & Wyber, J. (2000). Quality and generic (professional) skills. *Quality in Higher Education*, 6(3), 231-243.
- Dearing, R. (1997). *The Dearing Report Higher Education in the learning society*. National Committee of Inquiry into Higher Education. Retrieved from: <http://www.educationengland.org.uk/documents/dearing1997/dearing1997.html>
- Dicker, R., Garcia, M., Kelly, A., & Mulrooney, H. (2019). What does ‘quality’ in higher education mean? Perceptions of staff, students and employers. *Studies in Higher Education*, 44(8), 1425-1441. <https://doi:10.1080/03075079.2018.1445987>
- Direito, I., Pereira, A., & de Oliveira Duarte, A. M. (2012). Engineering undergraduates’ perceptions of soft skills: Relations with self-efficacy and learning styles. *Procedia-Social and Behavioural Sciences*, 55, 843-851. <https://doi:10.1016/j.sbspro.2012.09.571>.
- Elassy, N. (2013). A model of student involvement in the quality assurance system at institutional level. *Quality Assurance in Education*, 21(2), 162-198. <http://dx.doi.org/10.1108/09684881311310692>
- Elfaki E. A. (2004). Undergraduate curriculum reform in Saudi medical schools. *Saudi Medical Journal*, 21, 324-326.
- El-Maghraby, H. (2011) *Quality Assurance in Newly Established Universities in Saudi Arabia*. Arab network for quality assurance in higher education. Retrieved from: http://www.anqahe.org/files/abu_dhabi_2011/FullPapers/Hussein_Maghraby.pdf
- European Commission (2010). *Employers’ perception of graduate employability: analytical report*. Retrieved from: http://ec.europa.eu/public_opinion/flash/fl_304_en.pdf
- Fenton, S. J., Hood, H., Holder, M., May, P. B., & Mouradian, W. E. (2003). The American Academy of Developmental Medicine and Dentistry: eliminating health disparities for individuals with mental retardation and other developmental disabilities. *Journal of Dental Education*, 67(12), 1337-1344. <http://dx.doi.org/10.1002/j.0022-0337.2003.67.12.tb03727.x>

- Field, A. (2018). *Discovering statistics using IBM SPSS statistics*. (5th ed.). London: SAGE Publications Ltd.
- Flick, U. (2009). *An introduction to qualitative research* (4th ed.). London: Sage.
- Frank, J. R., & Danoff, D. (2007). The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. *Medical Teacher*, 29(7), 642-647.
- Frank R. A. (2000). Medical communication: non-native English speaking patients and native English speaking professionals. *English for Specific Purposes*, 19, 31-62.
- Frankel, A., & English, S. (2004). Transfer of information from medical schools. *Hospital Medicine*, 65(3), 170-173. <https://doi.org/10.12968/hosp.2004.65.3.12401>
- Frenken, K., Ponds, R., & Van Oort, F. (2010). The citation impact of research collaboration in science-based industries: A spatial institutional analysis. *Papers in Regional Science*, 89(2), 351-71.
- Galeeva, R. B. (2016). SERVQUAL application and adaptation for educational service quality assessments in Russian higher education. *Quality Assurance in Education*, 24(3), 329-348.
- Gallagher, G., Cooper, W., Collins, A., & Shahir, T. (2015). *How will the GCC close the skills gap?* AU3093. EY. Retrieved from: <https://pdf4pro.com/cdn/how-will-the-gcc-close-the-skills-gap-ey-2bbd9d.pdf>
- Garvin, D. A. (1988). *Managing quality: The strategic and competitive edge*. New York: The Free Press.
- General Authority for Statistics (2021). *Unemployment Rates*. General Authority for Statistics. Retrieved from: <https://www.stats.gov.sa/en/820>
- General Authority for Statistics (2020). *Unemployment Rates*. General Authority for Statistics. Retrieved from: <https://www.stats.gov.sa/en/820>
- General Medical Council (2018). *Outcomes for Graduates*. Retrieved from: https://www.gmc-uk.org/-/media/documents/dc11326-outcomes-for-graduates-2018_pdf-75040796.pdf
- General Medical Council Education Committee (2003). *Tomorrow's doctors: recommendations on undergraduate medical education*. London: General Medical Council.
- Gillham, B. (2000). *The Research interview*. London, New York: Continuum.
- Gilmore, H. L. (1974). Product conformance. *Quality Progress*, 7(5), 16-19.
- Goldacre, M., Taylor, K., & Lambert, T. (2010). Views of junior doctors about whether their medical school prepared them well for work: questionnaire surveys. *BMC Medical Education*, 10(1). <https://doi.org/10.1186/1472-6920-10-78>
- Gorard, S. (2021). *How to make sense of statistics*. London: Sage Publications Ltd.
- Gray, D. E. (2014). *Doing research in the real world* (3rd ed.). London: Sage Publications Ltd.
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255-274.
- Griffin, M., & Coelho, P. (2019). Business students' perspectives on employability skills post internship experience. *Higher Education, Skills and Work-Based Learning*, 9(P21, #38), 60-75. <https://doi.org/10.1108/HESWBL-12-2017-0102>

- Griffiths, D. A., Inman, M., Rojas, H., & Williams, K. (2018). Transitioning student identity and sense of place: Future possibilities for assessment and development of student employability skills. *Studies in Higher Education*, 43(5), 891-913.
- Guetterman, T. (2015). Descriptions of sampling practices within five approaches to qualitative research in education and the health sciences. *Educational Psychology Papers and Publications*, 16(2). <http://nbn-resolving.de/urn:nbn:de:0114-fqs1502256>
- Habib, M., Abbas, J., & Noman, R. (2019). Are human capital, intellectual property rights, and research and development expenditures really important for total factor productivity? An empirical analysis. *International Journal of Social Economics*, 46(6), 756-774. <https://doi.org/10.1108/IJSE-09-2018-0472>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *SEM: Confirmatory factor analysis. Multivariate data analysis*. Upper Saddle River: Pearson Prentice Hall.
- Hammersley, M. & Traianou, A. (2012). *Ethics and educational research*. British Educational Research Association. Retrieved from: <http://www.bera.ac.uk/category/keywords/ethics>
- Harden, R., Grant, J., Buckley, G., & Hart, I. (1999). BEME Guide No. 1: Best evidence medical education. *Medical Teacher*, 21(6), 553-562.
- Harvey, L., & Green, D. (1993). Defining quality, assessment and evaluation in higher education. *Assessment & Evaluation in Higher Education*, 18(1), 9-34.
- Harvey, L., & Williams, J. (2010). Fifteen years of quality in higher education. *Quality in Higher Education*, 16(1), 3-36. <http://dx.doi.org/10.1080/13538321003679457>
- Hasan, T., & Gupta, P. (2013). Assessing the learning environment at Jazan medical school of Saudi Arabia. *Medical Teacher*, 35(sup1), S90-S96. <https://doi.org/10.3109/0142159X.2013.765546>
- Hazelkorn, E. (2011). *Rankings and the reshaping of higher education: The battle for world-class excellence*. Houndmills: Palgrave Macmillan.
- Hesketh, A. (2000). Recruiting an elite? Employers' perceptions of graduate education and training. *Journal of Education and Work*, 13(3), 245-271. <https://doi.org/10.1080/713676992>
- Hillage, J., & Pollard, E. (1998). *Employability: Developing a framework for policy analysis*. DfEE. London: Department for Education and Employment. Retrieved from: http://www.dfes.gov.uk/employability/employability_developing_a_framework_for20160309-24658-1ix1nw2-with-cover-page-v2.pdf (d1wqtxts1xzle7.cloudfront.net)
- Hilmer, S. N., Seale, J. P., Le Couteur, D. G., Crampton, R., & Liddle, C. (2009). Do medical courses adequately prepare interns for safe and effective prescribing in New South Wales public hospitals? *Internal Medicine Journal*, 39(7), 428-434.
- Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 2(1), 104-121
- Hoecht, A. (2006). Quality assurance in UK higher education: Issues of trust, control, professional autonomy and accountability. *Higher Education*, 51(4), 541-563. <https://doi.org/10.1007/s10734-004-2533-2>
- Hoellein, A. R., Feddock, C. A., Wilson, J. F., Griffith III, C. H., Rudy, D. W., & Caudill, T. S. (2007). Student involvement on teaching rounds. *Academic Medicine*, 82(10), S19-S21. <https://doi.org/10.1097/ACM.0b013e31814004d7>

- Horowitz, R. E. (2006). Expectations and essentials for the community practice of pathology. *Human Pathology*, 37(8), 969-973. <https://doi.org/10.1016/j.humpath.2006.01.035>
- Hossain, M. M., & Hossain, M. A. (2019). Understanding the quality management of private universities in Bangladesh: A hierarchical model. *Quality Management Journal*, 26(4), 191-206. <https://doi.org/10.1080/10686967.2019.1647771>
- Houston, D. (2008). Rethinking quality and improvement in higher education. *Quality Assurance in Education*, 16(1), 61-79. <https://doi.org/10.1108/09684880810848413>
- Hurrell, S. A. (2016). Rethinking the soft skills deficit blame game: Employers, skills withdrawal and the reporting of soft skills gaps. *Human Relations*, 69(3), 605-628.
- Hurwitz, B., Vass, A. (2002). What's a good doctor, and how can you make one? *British Medical Journal*, 325, 667-8.
- İçli, G. E., & Anil, N. K. (2014). The HEDQUAL scale: A new measurement scale of service quality for MBA programs in higher education. *South African Journal of Business Management*, 45(3), 31-43.
- Ilies, L., Osoian, C., & Zaharie, M. (2010). Quality management system in higher education – employers' approach. *Managerial Challenges of the Contemporary Society*, 3, 75-79.
- Illing, J., Morrow, G., Kergon, C., Burford, B., Baldauf, B., & Davies, C., ... & Morrison, J. (2013). Perceptions of UK medical graduates' preparedness for practice: A multi-centre qualitative study reflecting the importance of learning on the job. *BMC Medical Education*, 13(1). <https://doi.org/10.1186/1472-6920-13-34>
- In, J. (2017). Introduction of a pilot study. *Korean Journal of Anesthesiology*, 70(6), 601-605. <https://doi.org/10.4097/kjae.2017.70.6.601>
- Iqbal, A., & Zenchenkov, M. (2014). Market tested business education: Corporate sector perceptions of Saudi graduates' competencies. *Asia-Pacific Journal of Cooperative Education*, 15(P21, #38), 91-106.
- Issa, A., & Siddiek, A. (2012). Higher education in the Arab world & challenges of labor market. *International Journal of Business and Social Science*, 3(9), 146-151.
- Jain, R., Sinha, G., & Sahney, S. (2011). Conceptualizing service quality in higher education. *Asian Journal on Quality*, 12(3), 296-314. <https://doi.org/10.1108/15982681111187128>
- James, S., Warhurst, C., Tholen, G., & Commander, J. (2013). What we know and what we need to know about graduate skills. *Work, Employment and Society*, 27(6), 952-963.
- Jauch, L. R., & Orwig, R. A. (1997). A violation of assumptions: Why TQM won't work in the ivory tower. *Journal of Quality Management*, 2(2), 279-292.
- Jelena, L. (2010). *Determinants of service quality in higher education*. Retrieved from: <http://www.efos.unios.hr/repec/osi/journl/PDF/InterdisciplinaryManagementResearchVI/IMR6a48.pdf>
- Jen, M., Bottle, A., Majeed, A., Bell, D., & Aylin, P. (2009). early in-hospital mortality following trainee doctors' first day at work. *Plos ONE*, 4(9), 7103. <https://doi.org/10.1371/journal.pone.0007103>
- Johnson, B., & Christensen, L. (2008). *Educational research: Quantitative, qualitative, and mixed approaches* (3rd ed.). Thousand Oaks, CA: Sage.

- Johnson, R., & Onwuegbuzie, A. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26. [https://doi: 10.3102/0013189x033007014](https://doi.org/10.3102/0013189x033007014)
- Johnson, R., Onwuegbuzie, A., & Turner, L. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133. [https://doi: 10.1177/1558689806298224](https://doi.org/10.1177/1558689806298224)
- Jones, E. (2010). A professional practice portfolio for quality learning. *Higher Education Quarterly*, 64(3), 292-312. <https://doi.org/10.1111/j.1468-2273.2010.00458.x>
- Jones, J., & Saram, D. D. D. (2005) Academic staff views of quality systems for teaching and learning: A Hong Kong case study. *Quality in Higher Education*, 11, 47-58.
- Joseph, M., & Joseph, B. (1997). Employers' perceptions of service quality in higher education. *Journal of Marketing for Higher Education*, 8(2), 1-13. [https://doi:10.1300/J050v08n02_01](https://doi.org/10.1300/J050v08n02_01)
- Joseph, M., Yakhou, M., & Stone, G. (2005). An educational institution's quest for service quality: Customers' perspective. *Quality Assurance in Education*, 13(1), 66-82. <https://doi.org/10.1108/09684880510578669>
- Jung, H. P., Wensing, M., & Grol, R. (1998). What makes a good general practitioner: Do patients and doctors have different views? *British Journal of General Practice*, 47(425), 805-809.
- Jupiter, H., Othman, I. W., Suki, N. M., Yusoff, M. S., Awang, H., & Razak, R. A. (2017). Factors influencing international student's decision in choosing study destination abroad. *Labuan E-Journal of Muamalat and Society*, 11(1), 86-97.
- Juran, J. M. (1988). *Juran on planning for quality*. New York, NY: The Free Press.
- Juran, J., & Gryna, F. (1988). *Juran's quality control handbook* (4th ed.). New York: McGraw-Hill.
- Kaiser, H. F. (1970). A second generation Little Jiffy. *Psychometrika*, 35, 401-415.
- Kass, M. E., Crawford, J. M., Bennett, B., Cox, T. M., Grimes, M. M., LiVolsi, V., ... & Wilkinson, D. S. (2007). Adequacy of pathology resident training for employment: A survey report from the Future of Pathology Task Group. *Archives of Pathology & Laboratory Medicine*, 131(4), 545-555.
- Kelley, T. L. (1927). *Interpretation of educational measurements*. New York: Macmillan.
- Khalid B. A. (2008). The current status of medical education in the Gulf Cooperation Council countries. *Annals of Saudi Medicine*, 28, 83-88.
- Khan, N. S., & Yildiz, Y. (2020). Impact of intangible characteristics of universities on student satisfaction. *Amazonia Investiga*, 9(26), 105-116.
- Kilner, T. (2004). Desirable attributes of the ambulance technician, paramedic, and clinical supervisor: findings from a Delphi study. *Emergency Medicine Journal*, 21(3), 374-378.
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology*, 49(1), 1-49.
- Krueger, R. (2000). *Focus groups: A practical guide for applied research* (3rd ed.). Thousand Oaks, CA: Sage.
- Kundu, G. K. (2016). Quality in higher education from different perspectives: A literature review. *International Journal for Quality Research*, 11(1), 17-34. [https://doi:10.18421/IJQR11.01-02](https://doi.org/10.18421/IJQR11.01-02)

- Kutbi, I., & Hashim, K. (2017). Faculty perspectives in Saudi Arabia pertaining to attributes of successful universities and future learning environments. *International Journal of Higher Education*, 6(5), 95-102. <https://doi.org/10.5430/ijhe.v6n5p95>
- Laidlaw, A., Guild, S., & Struthers, J. (2009). Graduate attributes in the disciplines of medicine, dentistry and veterinary medicine: A survey of expert opinions. *BMC Medical Education*, 9(1). <https://doi.org/10.1186/1472-6920-9-28>
- Langdale, L., Schaad, D., Wipf, J., Marshall, S., Vontver, L., & Scott, C. (2003). Preparing graduates for the first year of residency. *Academic Medicine*, 78(1), 39-44. <https://doi.org/10.1097/00001888-200301000-00009>
- Latif, K. F., Latif, I., Farooq Sahibzada, U., & Ullah, M. (2019). In search of quality: measuring higher education service quality (HiEduQual). *Total Quality Management & Business Excellence*, 30(7-8), 768-791. <https://doi.org/10.1080/14783363.2017.1338133>
- Lauder, H., & Mayhew, K. (2020). Higher education and the labour market: an introduction. *Oxford Review of Education*, 46(1), 1-9. <https://doi.org/10.1080/03054985.2019.1699714>
- Lefevre, J. H., Roupret, M., Kerneis, S., & Karila, L. (2010). Career choices of medical students: a national survey of 1780 students. *Medical Education*, 44(6), 603-612.
- Levinson, W., Roter, D. L., Mullooly, J. P., Dull, V. T., & Frankel, R. M. (1997). Physician-patient communication: the relationship with malpractice claims among primary care physicians and surgeons. *JAMA*, 277(7), 553-559.
- Lewis, R. C., & Booms, B. H. (1983). The marketing aspects of service quality. In L. Berry, G. Shostack, & G. Upah. (Eds.), *Emerging Perspectives on Services Marketing* (pp. 99-107). Chicago, IL: American Marketing.
- Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. London: SAGE Publications Ltd.
- Lindberg, O. (2013). Gatekeepers of a profession? Employability as capital in the recruitment of medical interns. *Journal of Education and Work*, 26(4), 431-452. <https://doi.org/10.1080/13639080.2012.658032>
- Llewellyn Smith, J. (2015). Why 'soft skills' are more important than a great CV. *The Telegraph*. Retrieved from: <http://www.telegraph.co.uk/women/womens-business/11326058/Forget-the-CV-Why-soft-skills-are-more-important.html>.
- Mahapatra, S. S., & Khan, M. S. (2007). Assessment of quality in technical education: an exploratory study. *Journal of Services Research*, 7(1), 81-101.
- Mahapatra, S. S., & Khan, M. S. (2007). A framework for analyzing quality in education settings. *European Journal of Engineering Education*, 32(2), 205-217.
- Makki, B. I., Salleh, R., Memon, M. A., & Harun, H. (2015). The relationship between work readiness skills, career self-efficacy and career exploration among engineering graduates: A proposed framework. *Research Journal of Applied Sciences, Engineering and Technology*, 10(9), 1007-1011. <http://dx.doi.org/10.19026/rjaset.10.1867>
- Manly, B. F. J. (2005). *Multivariate statistical methods: A primer* (3rd ed.). New York: Chapman and Hall.

- Marradi, A. (1981). Factor analysis as an aid in the formulation and refinement of empirically useful concepts. In D. J. Jackson, & E. F. Borgatta (Eds.), *Factor Analysis and Measurement in Sociological Research* (pp. 11-49). London: Sage.
- Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in IS research. *Journal of Computer Information Systems*, 54(1), 11-22. [https://doi: 10.1080/08874417.2013.11645667](https://doi.org/10.1080/08874417.2013.11645667)
- Martin, I., & Jolly, B. (2001). Predictive validity and estimated cut score of an objective structured clinical examination (OSCE) used as an assessment of clinical skills at the end of the first clinical year. *Medical Education*, 36(5), 418-425.
- Matheson, C., & Matheson, D. (2009). How well prepared are medical students for their first year as doctors? The views of consultants and specialist registrars in two teaching hospitals. *Postgraduate Medical Journal*, 85(1009), 582-589.
- Matu, J., & Paik, E. (2021). Generic skills development in the Gulf Cooperation Council countries and graduate outcomes: A systematic review of the literature. *Gulf Education and Social Policy Review (GESPR)*, 69-90. [https://doi: 10.18502/gespr.v2i1.9309](https://doi.org/10.18502/gespr.v2i1.9309)
- Maxwell, J. (1997). Designing a qualitative study. In L. Bickman, & D. Rog (Eds.), *Handbook of Applied Social Research Methods* (pp. 69-100). Thousand Oaks, CA: Sage.
- Mazur, G. (1996). The application of quality function deployment (QFD) to design a course in total quality management (TQM) at the University of Michigan College of Engineering. *Proceedings of International Conference on Quality Yokohama, JUSE*, 15-18.
- Mbise, E. R., & Tuninga, R. S. J. (2016). Measuring business schools' service quality in an emerging market using an extended SERVQUAL instrument. *South African Journal of Business Management*, 47(1), 61-75.
- McManus, I., Richards, P., Winder, B., & Sproston, K. (1998). Clinical experience, performance in final examinations, and learning style in medical students: prospective study. *British Medical Journal*, 316(7128), 345-350. [https://doi: 10.1136/bmj.316.7128.345](https://doi.org/10.1136/bmj.316.7128.345).
- Melo Prado, H., Hanois Falbo, G., Rodrigues Falbo, A., & Natal Figueiroa, J. (2011). Active learning on the ward: outcomes from a comparative trial with traditional methods. *Medical Education*, 45(3), 273-279. [https://doi:10.1111/j.1365-2923.2010.03846.x](https://doi.org/10.1111/j.1365-2923.2010.03846.x)
- Meo, S. A., Hassan, A., & Usmani, A. M. (2013). Research progress and prospects of Saudi Arabia in global medical sciences. *European Review for Medical and Pharmacological Sciences*, 17(24), 3265-3271.
- Min, S., & Khoon, C. C. (2013). Demographic factors in the evaluation of service quality in higher education: International students' perspective. *International Review of Management and Business Research*, 2(4).
- Mitchell, M., Henderson, A., Groves, M., Dalton, M., & Nulty, D. (2009). The objective structured clinical examination (OSCE): optimising its value in the undergraduate nursing curriculum. *Nurse Education Today*, 29(4), 398-404. [https://doi:10.1016/j.nedt.2008.10.007](https://doi.org/10.1016/j.nedt.2008.10.007).
- MoE (2016). *Budget*. Ministry of Education. Retrieved from: <http://www.moe.gov.sa/ar/Pages/Budget.aspx>.
- MoE (2021). *Private universities in Saudi Arabia*. Ministry of Education. Retrieved from: <https://www.moe.gov.sa/en/education/highereducation/Pages/PrivateUniversity.aspx>

- MoH (2020). *Statistical yearbook 2020*. Ministry of Health. Retrieved from: <https://www.moh.gov.sa/en/Ministry/Statistics/book/Pages/default.aspx>
- Mohamad, M. M., Sulaiman, N. L., Sern, L. C., & Salleh, K. M. (2015). Measuring the validity and reliability of research instruments. *Procedia-Social and Behavioral Sciences*, 204, 164-171.
- Monica, Z., Codruta, O., & Adrian, O. (2011). Graduate recruitment and selection – A linkage between labor market and higher education. *International Journal of Social Science and Humanity*, 1(3), 229.
- Moreau, M. P., & Leathwood, C. (2006). Graduates' employment and the discourse of employability: A critical analysis. *Journal of Education and Work*, 19(4), 305-324.
- Morrow, G., Johnson, N., Burford, B., Rothwell, C., Spencer, J., Peile, E., & Illing, J. (2012). Preparedness for practice: the perceptions of medical graduates and clinical teams. *Medical Teacher*, 34(2), 123-135. <https://doi.org/10.3109/0142159X.2012.643260>
- Mundfrom, D. J., Shaw, D. G., & Ke, T. L. (2009). Minimum sample size recommendations for conducting factor analysis. *International Journal of Testing*, 5(2), 159-168. https://doi.org/10.1207/s15327574ijt0502_4
- Nair, R. (2017). Graduate employability and educational sector in GCC countries: A macro level study. *Asian Journal of Management Sciences & Education*, 6(2) 80-99.
- National Commission for Academic Accreditation & Assessment (2015). *Handbook*. Retrieved from: <https://www.ncaaa.org.sa/en/Releases/Pages/Handbooks.aspx>
- National Qualification Framework (2020). *Handbook*. National Center for Academic Accreditation and Assessment. Retrieved from: <http://www.ncaaa.org.sa/en/Releases/NationalQualifFrameworkDocuments/National%20Qualification%20Framework.pdf>
- NCAAA (2018). *Handbook*. National Commission for Academic Accreditation & Assessment. Retrieved from: <http://www.ncaaa.org.sa/english/default.aspx>.
- NCAAA (2021). *NCAAA establishment*. National Center for Academic Accreditation and Assessment. Retrieved from: <https://etec.gov.sa/en/About/Centers/Pages/Accreditation.aspx>
- Newman, M. (2003). *A pilot systematic review and meta-analysis on the effectiveness of problem-based learning*. Cambridge University. Retrieved from: <http://www.ltsn-01.ac.uk/resources/features/pbl>.
- Newton, D. A., Grayson, M. S., & Thompson, L. F. (2005). The variable influence of lifestyle and income on medical students' career specialty choices: Data from two US medical schools, 1998–2004. *Academic Medicine*, 80(9), 809-814.
- Nicol, D. (2010). *The foundation for graduate attributes: Developing self-regulation through self and peer-assessment*. Glasgow: Quality Assurance Agency.
- Noaman, A. Y., Ragab, A. H. M., Madbouly, A. I., Khedra, A. M., & Fayoumi, A. G. (2015). Higher education quality assessment model: Towards achieving educational quality standard. *Studies in Higher Education*, 42(1), 23-46. <https://doi.org/10.1080/03075079.2015.1034262>
- Oakland, J. S. (2004). *Oakland on quality management*. Oxford: Elsevier Butterworth-Heinemann.

- O'Brien, K., Hartley, P., Dawson, D., Quick, J., & Moore, A. (2013). Work readiness in paramedic graduates: what are employers looking for? *International Paramedic Practice*, 3(4), 98-104. <https://doi.org/10.12968/ippr.2013.3.4.98>
- O'Donnabhain, R., & Friedman, N. D. (2018). What makes a good doctor? *Internal Medicine Journal*, 48(7), 879-882. <https://doi.org/10.1111/imj.13942>
- Owlia, M. S., & Aspinwall, E. M. (1996). A framework for the dimensions of quality in higher education. *Quality Assurance in Education*, 4(2), 12-20. <https://doi.org/10.1108/09684889610116012>
- Oxfords Business Group (2018). *The report Saudi Arabia 2018*. Oxford Business Group. Retrieved from: <https://oxfordbusinessgroup.com/saudi-arabia-2018>
- Parasuraman, A., Zeithaml, V., & Berry, L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4), 41-50.
- Pegg, A., Waldoock, J., Hendy-Isaac, S., & Lawton, R. (2012). *Pedagogy for employability*. York: Higher Education Academy.
- Peters, T. J., & Waterman, R. H. (1982). *In search of excellence*. New York, NY: Harper & Row.
- Pham, H., T. (2019). Stakeholders' engagement in quality assurance in Vietnam. In C. H. Nguyen, & M. Shah (Eds.), *Quality assurance in Vietnamese higher education* (pp. 137-161). Cham: Springer.
- Picard, M., Y. (2007). *Academic English right from the start: A critical realist study of the way academic English is constructed at a Gulf University* [PhD thesis, Rhodes University, Grahamstown]. <http://eprints.ru.ac.za/907/>
- Post, M. D., Johnson, K., Brissette, M. D., Conran, R. M., Domen, R. E., Hoffman, R. D., ... Powell, S. Z. (2015). Employer expectations for newly trained pathologists: Report of a survey from the Graduate Medical Education Committee of the College of American Pathologists. *Archives of Pathology & Laboratory Medicine*, 141(2), 193-202. <https://doi.org/10.5858/arpa.2015-0138-cp>
- Premadasa, I. G., Shehab, D., Al-Jarallah, K. F., & Thalib, L. (2008). Frequency and confidence in performing clinical skills among medical interns in Kuwait. *Medical Teacher*, 30(3), 60-65. <https://doi.org/10.1080/01421590801915652>
- Price, I., Matzdorf, F., Smith, L., & Agahi, H. (2003). The impact of facilities on student choice of university. *Facilities*, 21(10), 212-22.
- Punch, K. (2009). *Introduction to research methods in education*. London: Sage Publications Ltd.
- Quester, P. G., Romaniuk, S., & Wilkinson, J. W. (2015). A test of four service quality measurement scales: the case of the Australian advertising industry. In *Proceedings of the 1995 World Marketing Congress* (pp. 384-391). Springer, Cham.
- Quinn, A., Lemay, G., Larsen, P., & Johnson, D. M. (2009). Service quality in higher education. *Total Quality Management & Business Excellence*, 20(2), 139-152. <https://doi.org/10.1080/14783360802622805>
- Ramaiyah, A., Zain, M., Nurulazam, A, & Ahmad, H. (2007). *Exploring the dimensions of service quality in higher education research*. Retrieved from: <http://eprints.um.edu.my/16/1/arivalan.pdf>

- Ramirez, G., & Berger, J. (2014). Ranking, accreditation, and the international quest for quality. *Quality Assurance in Education*, 22(1), 88-104.
- Ramsden, P. (1992). *Learning to teach in higher education*. London: Routledge.
- Randheer, K. (2015). Service quality performance scale in higher education: Culture as a new dimension. *International Business Research*, 8(3), 29-41. <https://doi.org/10.5539/ibr.v8n3p29>
- Rencher, A., C. (2002). *Methods of multivariate analysis* (2nd ed.). Wiley.
- Rodman, K., Biloslavo, R., & Bratož, S. (2013). Institutional quality of a higher education institution from the perspective of employers. *Minerva*, 51(1), 71-92. <https://doi.org/10.1007/s11024-013-9219-9>
- Rowley, J. (1996). Measuring quality in higher education. *Quality in Higher Education*, 2(3), 237-255. <https://doi.org/10.1080/1353832960020306>
- Roy, M., Wood, T. J., Blouin, D., & Eva, K. W. (2020). The relationship between accreditation cycle and licensing examination scores: A national look. *Academic Medicine*, 95(11S Association of American Medical Colleges Learn Serve Lead: *Proceedings of the 59th Annual Research in Medical Education Presentations*), S103-S108. <https://doi.org/10.1097/ACM.0000000000003632>
- Russell Group. (2012). *Jewels in the crown: The importance and characteristics of UK world-class universities*. Retrieved from: <http://russellgroup.org/JewelsInTheCrown.pdf>
- Ryan, T. (2015). Quality assurance in higher education: A review of literature. *Higher Learning Research Communications*, 5(4). <https://doi.org/10.18870/hlrc.v5i4.257>
- Saaty, T. L. (2001). Fundamentals of the analytic hierarchy process. In Schmoldt, D. L., Kangas, J., Mendoza, G. A., & Pesonen, M. (Eds.), *The analytic hierarchy process in natural resource and environmental decision making* (pp. 15-35). Springer, Dordrecht.
- Sackett, D. L., Rosenberg, W. M., Gray, J. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: what it is and what it isn't. *British Medical Journal*, 312(7023), 71-72. <https://doi.org/10.1136/bmj.312.7023.71>
- Sahney, S., Banwet, D. K., & Karunes, S. (2004). A SERVQUAL and QFD approach to total quality education: a student perspective. *International Journal of Productivity and Performance Management*, 53(2), 143-166.
- Saichaie, K., & Morphew, C. C. (2014). What college and university websites reveal about the purposes of higher education. *The Journal of Higher Education*, 85(4), 499-530.
- Salem, R., O., Al-Mously, N., AlFadil, S., & Baalash, A. (2016). Pre-admission criteria and pre-clinical achievement: Can they predict medical students' performance in the clinical phase? *Medical Teacher*, 38(Sup 1), S26-30. <https://doi.org/10.3109/0142159X.2016.1142511>
- Salina, D., Nurazariah, A., Noraina, M., & Jegatheesan, R. (2011). Enhancing university business curriculum using an importance-performance approach: A case study of the business management faculty of a university in Malaysia. *International Journal of Educational Management*, 25(6), 545-569. <https://doi.org/10.1108/09513541111159059>
- Saudi Gazette (2018). *KSA doesn't need new medical colleges for 12 years: Experts*. Retrieved from <http://saudigazette.com.sa/article/529975>

- SaudiMeds Framework (2017). *SaudiMeds Framework*. National Center for Academic Accreditation and Assessment. Retrieved from: <https://etec.gov.sa/en/productsandservices/NCAAA/AccreditationProgrammatic/Pages/Medical-Colleges.aspx>
- Saudi Vision 2030. (2018). *Thriving economy rewarding opportunities*. Retrieved from: <http://vision2030.gov.sa/en/node/8>
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). England: Pearson.
- Savin-Baden, M., & Howell Major, C. (2013). *Qualitative research: The essential guide to theory and practice*. London: Routledge.
- Scheffer, C., Edelhäuser, F., Tauschel, D., Reichmann, M., & Tekian, A. (2010). Can final year medical students significantly contribute to patient care? A pilot study about the perceptions of patients and clinical staff. *Medical Teacher*, 32(7), 552-557.
- Schreier, M. (2018). Sampling and generalization. In U. Flick, (Ed.), *The SAGE handbook of qualitative data collection* (pp. 84-97). London: Sage.
- Schwandt, T. A. (2001). *Dictionary of qualitative inquiry* (2nd ed.). Thousand Oaks, CA: Sage.
- Shah, M., & Brown, G. (2009). The rise of private higher education in Australia: maintaining quality outcomes and future challenges. *Proceedings of the Australian Universities Quality Forum (AUQF)*, 1-3 July, Australian Universities Quality Agency, Alice Springs, pp. 138-143.
- Shah, M., Grebennikov, L., & Sid Nair, C. (2015). A decade of study on employer feedback on the quality of university graduates. *Quality Assurance in Education*, 23(3), 262-278.
- Shawky, S., & Soliman, N. K. (2001). Going beyond the curriculum to promote medical education and practice in Saudi Arabia. *Saudi Medical Journal*, 22(6), 477-480.
- Shehatta, I., & Mahmood, K. (2016). Correlation among top 100 universities in the major six global rankings: policy implications. *Scientometrics*, 109(2), 1231-1254.
- Shorfuzzaman, M., & Alhussein, M. (2016). Modeling learners' readiness to adopt mobile learning: A perspective from a GCC higher education institution. *Mobile Information Systems*, 1-10. <https://doi.org/10.1155/2016/6982824>
- Siedlecki, S. (2019). Tips for Developing Good Questionnaire Items. *Clinical Nurse Specialist*, 33(6), 253-260. <https://doi.org/10.1097/nur.0000000000000478>
- Silva, D. S., Hermínio, G., de Moraes, S. M., & Kanashiro Makiya, I. (2017). Measurement of perceived service quality in higher education institutions: A review of HEdPERF scale use. *Quality Assurance in Education*, 25(4), 415-439.
- Simpson, J. G., Furnace, J., Crosby, J., Cumming, A. D., Evans, P. A., Friedman, B. D. M., & MacPherson, S. G. (2002). The Scottish doctor – learning outcomes for the medical undergraduate in Scotland: a foundation for competent and reflective practitioners. *Medical Teacher*, 24(2), 136-143. <https://doi.org/10.1080/01421590220120713>
- Sin, C., & Neave, G. (2016). Employability deconstructed: Perceptions of Bologna stakeholders. *Studies in Higher Education*, 41(8), 1447-62. <https://doi.org/10.1080/03075079.2014.977859>

- Sin, C., Tavares, O., & Amaral, A. (2017). Accepting employability as a purpose of higher education? Academics' perceptions and practices. *Studies in Higher Education*, 44(6), 920-931. <https://doi.org/10.1080/03075079.2017.1402174>
- Singh, P., Thambusamy, R., Ramly, A., Abdullah, I. H., & Mahmud, Z. (2013). Perception differential between employers and instructors on the importance of employability skills. *Procedia - Social and Behavioral Sciences*, 90, 616-625.
- Smith, L., & Abouammoh, A. (2013). *Higher education in Saudi Arabia*. The Netherlands: Springer.
- Sohail, M. S., & Shaikh, N. M. (2004). Quest for excellence in business education: a study of student impressions of service quality. *The International Journal of Educational Management*, 18(1), 58-65.
- Srikanthan, G., & Dalrymple, J. F. (2010). Developing a holistic model for quality in higher education. *Quality in Higher Education*, 8(3), 215-224. <https://doi.org/10.1080/1353832022000031656>
- Succi, C., & Canovi, M. (2019). Soft skills to enhance graduate employability: comparing students and employers' perceptions. *Studies in Higher Education*, 45(9), 1834-1847. <https://doi.org/10.1080/03075079.2019.1585420>
- Sultan, P., & Tarafder, T. (2007). Critical factors in service quality measurement for private universities: The case of Bangladesh. *Ritsumeikan Journal of Asia Pacific Studies*, 22(1), 75-98.
- Sultan, P., & Yin Wong, H. (2010). Service quality in higher education – a review and research agenda. *International Journal of Quality and Service Sciences*, 2(2), 259-272. <https://doi.org/10.1108/17566691011057393>
- Swailles, S., Al Said, L. G., & Al Fahdi, S. (2012). Localisation policy in Oman: A psychological contracting interpretation. *International Journal of Public Sector Management*, 25(5), 357-372. <https://doi.org/10.1108/09513551211252387>
- Tabachnick, B. M. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5, pp. 481-498). Boston, MA: Pearson.
- Takalo, S. K., Abadi, A. R. N. S., Vesal, S. M., Mizaei, A., & Nawaser, K. (2013). Fuzzy failure analysis: A new approach to service quality analysis in higher education institutions. *International Education Studies*, 6(9), 93-106.
- Tam, M. (2001). Measuring quality and performance in higher education. *Quality in Higher Education*, 7(1), 47-54.
- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.
- Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social & behavioural research*. Thousand Oaks, CA: Sage.
- Tashakkori, A., & Teddlie, C. (2009). *SAGE handbook of mixed methods in social & behavioural research* (3rd ed.). Thousand Oaks, CA: Sage.
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55.

- Taylor, S. (1999). Better learning through better thinking: Developing students' metacognitive abilities. *Journal of College Reading and Learning*, 30(1), 34-45.
- Teagle, A. R., George, M., Gainsborough, N., Haq, I., & Okorie, M. (2017). Preparing medical students for clinical practice: easing the transition. *Perspectives on Medical Education*, 6(4), 277-280. <https://doi:10.1007/s40037-017-0352-2>
- Teas, R. K. (1993). Consumer expectations and the measurement of perceived service quality. *Journal of Professional Services Marketing*, 8(2), 33-54.
- Teeroovengadum, V., Kamalanabhan, T. J., & Seebaluck, A. K. (2016). Measuring service quality in higher education. *Quality Assurance in Education*, 24(2), 244-258. <https://doi:10.1108/qaе-06-2014-0028>
- Teichler, U., & Jahr, V. (2001). Mobility during the course of study and after graduation? *European Journal of Education*, 36(4), 443-458.
- Telmesani, A., Zaini, R. G., & Ghazi, H. O. (2011). Medical education in Saudi Arabia: a review of recent developments and future challenges. *Eastern Mediterranean Health Journal*, 17(08), 703-707. <https://doi:10.26719/2011.17.8.703>
- Thomas, A., Piquette, C., & McMaster, D. (2016). English communication skills for employability: The perspectives of employers in Bahrain. *Learning and Teaching in Higher Education: Gulf Perspectives*, 13(P21, #38). <https://doi.org/10.18538/lthe.v13.n1.227>.
- Tomlinson, M. (2012). Graduate employability: A review of conceptual and empirical themes. *Higher Education Policy*, 25(4), 407-431. <https://doi:10.1057/hep.2011.26>
- Tsinidou, M., Gerogiannis, V., & Fitsilis, P. (2010). Evaluation of the factors that determine quality in higher education: an empirical study. *Quality Assurance in Education*, 18(3), 227-244. <https://doi:10.1108/09684881011058669>
- Tymms, P. (2012). Questionnaires. In J. Arthur, M. Waring, R. Coe, & L. V. Hedges (Eds.), *Research Methods and Methodologies in Education* (pp. 231-240). London: Sage.
- Udam, M., & Heidmets, M. (2013). Conflicting views on quality: interpretations of 'a good university' by representatives of the state, the market and academia. *Quality in Higher Education*, 19(2), 210-24. <https://doi:10.1080/13538322.2013.774805>
- Ul Haq, I., Ur Rehman, S., Al-Kadri, H. M., & Farooq, R. K. (2020). Research productivity in the health sciences in Saudi Arabia: 2008-2017. *Annals of Saudi Medicine*, 40(2), 147-154. <https://doi:10.5144/0256-4947.2020.147>
- United Nations. (2012). *World population prospects, the 2012 revision*. Retrieved from: <https://www.un.org/en/development/desa/publications/world-population-prospects-the-2012-revision.html>.
- Velasco, M. S. (2012). More than just good grades: Candidates' perception about the skills and attributes employers seek in new graduates. *Journal of Business Economics and Management*, 13(3), 499-517. <https://doi.org/10.3846/16111699.2011.620150>
- Vernon D. T., & Blake R. L. (1993). Does problem-based learning work? A meta-analysis of evaluative research. *Academic Medicine*, 68, 550-563.
- Waldman, H. B., & Perlman, S. P. (2002). Preparing to meet the dental needs of individuals with disabilities. *Journal of Dental Education*, 66(1), 82-85.

- Wall, D., Bolshaw, A., & Carolan, J. (2006). From undergraduate medical education to pre-registration house officer: how prepared are students? *Medical Teacher*, 28(5), 435-439.
- Watmough, S. D., O'Sullivan, H., & Taylor, D. C. (2010). Graduates from a reformed undergraduate medical curriculum based on Tomorrow's Doctors evaluate the effectiveness of their curriculum 6 years after graduation through interviews. *BMC Medical Education*, 10(1), 1-8. <https://doi:10.1186/1472-6920-10-65>
- Watty, K. (2006). Addressing the basics: Academics' view of the purpose of higher education. *The Australian Educational Researcher*, 33(1), 23-39.
- Whitehead, C. R., Kuper, A., Hodges, B., & Ellaway, R. (2015). Conceptual and practical challenges in the assessment of physician competencies. *Medical Teacher*, 37(3), 245-251. <https://doi:10.3109/0142159X.2014.993599>
- Wickramasinghe, V., & Perera, L. (2010). Graduates', university lecturers' and employers' perceptions towards employability skills. *Education+ Training*. 52(3), 226-244. <https://doi.org/10.1108/00400911011037355>
- Widaman, K. F. (1993). Common factor analysis versus principal component analysis: Differential bias in representing model parameters? *Multivariate Behavioral Research*, 28(3), 263-311.
- Wilson, W., J. (2001). *The bridge over the racial divide: Rising inequality and coalition politics*. London, UK: University of California Press.
- Williams, B. (2011). *Graduate attributes and the professionalisation of Australian paramedics: An empirical study*. Monash University.
- Williams, B., Onsmann, A., & Brown, T. (2010). Australian paramedic graduate attributes: a pilot study using exploratory factor analysis. *Emergency Medicine Journal*, 27(10), 794-799.
- Willis, T., & Taylor, A. (1999). Total quality management and higher education: The employers' perspective. *Total Quality Management*, 10(7), 997-1007. <https://doi.org/10.1080/0954412997181>
- Windish, D. M., Paulman, P. M., Goroll, A. H., & Bass, E. B. (2004). Do clerkship directors think medical students are prepared for the clerkship years? *Academic Medicine*, 79(1), 56-61.
- Wong, M., & Hamali, J. (2006). Higher education and employment in Malaysia. *International Journal of Business and Society*, 7(1), 102-119.
- Workplace Research Centre, University of Sydney (2014). *Employer satisfaction survey: report for the department of education*. Retrieved from: <http://education.gov.au/employersatisfaction-survey>
- Yingqiang, Z., & Yongjian, S. (2016). Quality assurance in higher education: Reflection, criticism, and change. *Chinese Education & Society*, 49(1-2), 7-19. <https://doi:10.1080/10611932.2016.1192382>
- Yogeswaran, K. (2005). Economic plan unit Malaysia. *Regional Conference on Investment Climate and Competitiveness in East Asia* (pp. 31-41).
- Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79-94.

- Zaharie, M., Osoian, C., & Gavrea, C. (2013). Applying quality function deployment to improve quality in higher education: Employers' perspective. *Managerial Challenges of the Contemporary Society. Proceedings*, 5, 172.
- Zaini, R. G., Bin Abdulrahman, K. A., Al-Khotani, A. A., Al-Hayani, A. M., Al-Alwan, I. A., & Jastaniah, S. D. (2011). Saudi Meds: a competence specification for Saudi medical graduates. *Medical Teacher*, 33(7), 582-584. <https://doi:10.3109/0142159X.2011.578180>

APPENDICES

Appendix A: National Qualification Framework Domains and Skills

1) Knowledge and Understanding

The graduate at this level will have:

- Broad in-depth integrated body of knowledge and comprehension of the underlying theories, principles, and concepts in one or more disciplines or field of work,
- In-depth knowledge and comprehension of processes, materials, techniques, practices, conventions, and/or terminology,
- A broad range of specialized knowledge and understanding informed by current developments of a discipline, profession, or field of work,
- Knowledge and comprehension of research and inquiry methodologies.

2) Values, Autonomy and Responsibility

The graduate at this level, within various complex contexts, will:

Values and Ethics

- Demonstrate commitment to professional and academic values, standards, and ethical codes of conduct, and represent responsible citizenship and coexistence with others

Autonomy and Responsibility

- Effectively plan for and achieve academic and/or professional self-development, assess own learning and performance, and autonomously make decisions regarding self-development and/or tasks based on convincing evidences.
- Autonomously and professionally manage tasks and activities related to the discipline and/or work,
- Collaborate responsibly and constructively on leading diverse teams to perform a wide range of tasks while playing a major role in planning and evaluating joint work,
- Actively participate in advancing the discipline and society.

3) Skills

The graduate at this level will have a broad range of advanced cognitive, practical and physical, and communication and ICT skills to

Cognitive Skills

- Apply integrated theories, principles, and concepts in various contexts, related to a discipline, profession, or field of work,
- Solve problems in various complex contexts in one or more disciplines or fields of work,
- Use critical thinking and develop creative solutions to current issues and problems, in various complex contexts, in a discipline, profession or field of work,
- Conduct inquiries, investigations, and research for complex issues and problems

Practical and Physical Skills

- Use and adapt advanced processes, techniques, tools, instruments, and/or materials in dealing with various complex practical activities,
- Carry out various complex practical tasks and procedures related to a discipline, professional practice, or field of work.

Communication and ICT Skills

- Communicate effectively to demonstrate theoretical knowledge comprehension and specialized transfer of knowledge, skills, and complex ideas to a variety of audiences,
- Use mathematical operations and quantitative methods to process data and information in various complex contexts, related to a discipline or field of work,
- Select, use, and adapt various standard and specialized digital technological and ICT tools and applications to process and analyze data and information to support and enhance research and/or projects.

(Source: National Qualification Framework, 2020, p. 19)

Appendix B: Quality Models in Higher Education

	Author/s	Year	Targeted Stakeholder(s)	Dimensions
1	Owlia and Aspinwall	1996	N/A* (Review of Literature)	• Tangibles • Competence • Attitude • Content • Delivery • Reliability
2	LeBlanc and Nguyen	1997	N/A* (Review of Literature)	• Contact Personnel/faculty • Reputation • Access to Facilities • Physical Evidence • Curriculum • Contact Personnel/Administration • Responsiveness
3	Ford et al.	1999a	Business Students (United States)	• Program Issues • Physical Aspects • Academic Reputation • Cost/Time Issues, Choice Influences • Other
4	Ford et al.	1999b	Business Students (New Zealand)	• Career Opportunities • Cost/Time • Physical Aspects • Program Issues • Location • Academic Reputation • Other
5	Johnson and Golomskiis	1999	N/A* (Review of Literature)	• Understanding Stakeholders • Leadership • Factual Approach to Decision Making Process Approach • Involvement of People • Continual Improvement in Quality Management Principles
6	Lagrosen et al.	2004	Students	• Corporate Collaboration • Information and Responsiveness

			(Business Studies)	• Courses Offered • Internal Evaluations • Computer Facilities • Collaboration and Comparisons • Library Resources
			(Australia and Sweden)	
7	Robert et al. ^[17] _{SEP}	2008	Postgraduate Students (UK)	• Academic • Leisure • Industry links • Cost ^[17]_{SEP}
8	Morales and Calderon-Monclosa	2008	Students (Latin America)	• Reliability • Empathy • Faculty • Administration • Tangibility
9	Nasser et al.	2008	Students (Lebanon)	• Academic Experience • Academic Advisor • Residential Life • Campus Life • Personal Development Opportunities • Resources • Student Services
10	Angell, Heffernan and Megicks	2008	United Kingdom	• Academic Factor • Cost/Value for Money • Leisure Factor • Industry Link Factor
11	Stodnick and Rogers	2008	United States	• Reliability • Responsiveness • Assurance • Empathy • Tangibles
12	Vaniarajan and Vijayadurai ^[17] _{SEP}	2010	Students (Arts, Sciences, Engineering Colleges and Specialized Management Institutes) (INDIA)	• Placement Facilities • Learning Outcomes • Responsiveness • Personality Development • Physical Facilities • Academics

13	Senthilkumar and Arulraj	2011	Students (INDIA)	• Faculty • Excellent Physical Resources • Range of Disciplines
14	Prasad and Jha	2013	N/A* (Review of Literature)	• Physical Aspects • Reliability • Competence • Personal Interaction • Course Structure • Policy

* No specific country

Appendix C: Interview Schedule

General Questions:

1. In your opinion, how do you define quality in higher education? (can you give me some examples of what good quality higher education might be? or what quality looks like in higher education?)
2. What is the role of the employer in higher education?
3. How would you evaluate universities as workforce providers?

Students' Employability Skills and Attributes:

4. What are your selection criteria for graduates?
5. What does attract you the most from candidates' CVs?
6. What are the critical employability skills you require from a candidate? For example: time management, work under pressure, work in teams and communication skills.
7. To what extent does graduates' GPA influence your recruitment decisions?
8. To what extent does the academic degree influence your recruitment decision?
9. How important is the practical skills of graduates? To what extent does training/internship opportunities of graduates influence your recruitment decision?
10. To what extent does students' involvement in activities influence your recruitment decision? For example: research productivity, conference attendance, community services and association memberships.
11. In your opinion, do you think you favor; generic skills or subject knowledge more? or are they equal?
12. To what extent do the roles of the university and employers vary in preparing graduates professionally? In terms of employability skills
13. Do you believe that our Saudi culture influence the quality of university graduates? In terms of English proficiency and separation between men and women

University Characteristics:

14. How would you describe a university that has achieved high quality status?
15. To what extent is the accreditation status and world ranking of an institution important for the quality of the university? (after briefing NCAAA 11 standards that every university has to adhere to)
16. To what extent is the reputation important for the quality of the university?
17. To what extent is the community services activities and research productivity important for the quality of the university?
18. Do media and social media representations of the university influence your recruitment decisions? If they do can you explain how they do?
19. How important is it for you as an employer to be involved and communicated from the university in your region? for example do you get involved in conferences/events and/or evaluating students and more.
20. Do you prefer graduates from certain universities? if so why?

Concluding Questions:

21. How do you imagine the future of Saudi universities in the light of vision 2030?
22. At the end, do you have anything to add about the quality in higher education that has not been covered in the interview?

Appendix D: Example of a Transcribed Interview

Interview 2

R: How do you evaluate the quality of a university generally?

P: first of all, through the university's reputation. This is the most important thing. When a university has a good history, everyone would recommend it. Secondly, the personal evaluation of graduates. It differs as one looks into the quality of education found in the university. In addition, the quality of people who are going there. One must know if there is proper supervision in that university or not. Sometimes a supervisor from the university comes early in the morning to supervise freshly graduated students. The supervisor meets with them and asks them about what they did in that day and the day before that. Then another supervisor would come at 12 o'clock. This all gives the impression that there is proper supervision for that university. Taking care of supervision is necessary for any university, as it must look after its students. One may remark that the supervised trainees tend to work better. This is not because they are scared of their supervisors. It is because there is an evaluation.

R: Because they are keen on working.

P: yes their keenness on work. Sometimes those trainees come and ask for help, or ask about a certain patient. They make you sense that they are involved more than the others are. Some other trainees may come exactly on time at 7 P.M. However, they spend the whole shift, from 7 to 4, playing with their mobile phones.

R: that is because they are not supervised properly.

P: yes for sure. One should not expect anything from people who are like that. When such students finish their training period in hospitals, they would not be even able to perform cannulation.

R: However, they add this training period to their C.V.

P: yes, and this is all the hospitals' fault. However, sometimes you, as a hospital, may find yourself helpless regarding that issue.

R: what is your role, as a head sector, regarding that issue?

P: As a head sector, when I noticed that this is happening, I stopped such trainees from work. I do not need them. There is no place here for those who do not want to work hard. Be it a physician or a trainee. If you came here to learn, you are most welcomed. We are all here to answer your questions as a trainee. If you want to work, there is plenty of work for you to do. If you are not willing to work hard, there is no place for you in here.

R: It is hard to implant the initiative in them, if they lack it.

P: Yes. As for the trainees who improved a lot more than before. They were mad at me at first. Some of their reactions were a little bit harsh. However, they change completely after only one week. It is as if they are whole other persons. Sometimes there is shortages and pressure, especially between 12 and 4 P.M. Nowadays; I started to give orders for trainees in those rush hours. Then I go to examine other patients, as I am sure that those trainees would perform the order or the task just as any hired nurse would. After the training period, I sat with them. I asked them, "Now, who's the winner me or you? You are the ones who learned and gained experience." We hired two of these trainees in here when they finished their training period, as they had worked hard with us for more than a year. We hired them from the first day without any need to orientations or anything, as they were quite familiar with the hospital's system already. However, what I have noticed nowadays is that there is no supervision at all. This upsets me very much.

R: yes, as supervision is an indicator to the quality of a university.

P: yes, along with the students' keenness on work. We do not separate between sexes and nationalities in here. The only important thing is to graduate a student who is ready to work regardless of the salary and working hours.

R: How do you generally evaluate a universities training process? Studies show that employers usually complain from universities, for their graduates are still in need of training. I do not mean the trainees. I mean the already hired employees.

P: do you mean administrate employees?

R: No, I mean the physicians and the medical personnel.

P: To be honest, it differs from one place to another. We deal here with multiple nationalities of physicians. We deal with Jordanians, Philippines, and Saudis. I have dealt with six Saudi doctors in here as a head sector. Two of them were really perfect.

R: they are already hired, right?

P: yes they are. One was here from three years, and the other is new. They are nearly perfect, that you may feel that they are non-Saudis. They have no problem with working hours; neither do they have a problem with patients. I personally see that they are a better fit for emergencies more than any other doctors are, as they are natives. I need natives working with me, because sometimes there is a language barrier between the patient and a foreigner doctor. When I have native doctors, things go more smoothly. However, the other four Saudi doctors were not so good.

R: more than 50% of the medical sector are foreigner doctors. Why is that?

P: I will tell you why. Firstly because of the salary. Saudi's salaries are much higher. Let us talk frankly...if a Saudi nurse was hired in a private hospital, she would get at least 11,000 Riyals per month. Other hospitals would only give 7,000 Riyals. Secondly because of the working hours. This is the greatest of issues. It is supposed that the working hours are, according to ministry of labor, 40 hours a week, and two days off. The problem is that sometimes doctors and nurses do not get the two days off in a row, due to the hospitals' needs. On the other hand, if you asked Philippine or Hindi nurses to cover an overtime shift, they would not complain at all. They would accept that pressure until things get better for the hospital. Saudis do not do this. Of course, that does not mean that everybody behaves the same. For example, I had Saudi nurses who used to work with me here since I was first hired. We are really missing them now. They were six nurses, and they left the hospital here as they got a chance to work in the public sector. Up to this day, we still remember them for the good they have done to this place.

P: yesterday, one of the Saudi nurses was working, and she was absolutely fine. Today she filed a sick note. No-shows are another issue and another reason for preferring foreigner doctors to Saudi doctors. I am sorry but some of them are careless. They really do not care. Any other foreigner nurse cannot just claim a sick leave. She must talk to her manager first and notify him that she is ill. Then he would ask her to find a solution or to ask one of her colleagues to cover the shift for her. One cannot just easily call and say that they are not coming for work. This is unacceptable for all people. It is rare that a foreigner doctor would do so, but Saudi doctors do that all the time. However, I must not overgeneralize, as I do not really have many Saudi fresh graduates in here. I only have four. Two of them are really good; one covers the morning shift and the other covers the night shift.

R: what I have understood from you is that the resistance is coming from graduates, as they do not want to work in the private sector. However, the private sector is willing to recruit.

P: what is really happening is the exact opposite. The health sector is working upside down. Foreigners are more than Saudis are. How am I supposed to work in a hospital, clinic, or ER without native Saudis? Sometimes people do not know how to talk with foreigners like how they talk with natives, as natives understand each other more easily. I need Saudi doctors. This is necessary. It cannot be that I only have four Saudi doctors here in the ER.

R: so you do not have a sufficient number of Saudi doctors here.

P: that is not the problem. The problem is that they come and work for one or two weeks, but they tire everybody. For example, we receive more than 270 patients per day. 270 patients are divided on the ER nurses. A Philippine nurse examines five patients per day, while the Saudi nurse examines only one patient.

R: maybe that is because they are not ready or because they do not know how to work under pressure.

P: yes, that is the result of not getting enough focus during their training period. They were not supervised properly. They just finished their studies and got the certificate, and then they were hired. Had they worked hard during the training period, they would have been able to examine more than just one patient per day. On the other hand, if they were just spending their time during the training period in the break area, they would not be able to do so. We actually see such things for ourselves. Some nurses do not go anywhere during the whole

shift. We do not worry about such nurses, as they came here to actually learn and work. Some other nurses punch in their fingerprints and disappear for the rest of the shift. I usually have a 10-minute-meeting with each new group. I tell them that this is the ER. I do not want any needless crowd in here. This is not a mall. If a patient sees this large number and nobody of them is taking care of him, he gets upset. Whoever is willing to work hard is more than welcomed. We are here to help. We even changed the hospitals policies for them (trainees). Before, the patient used to pledge that he would not let anyone take care of him but for the hired nurses and doctors. Now, we added trainees to that policy.

R: we will get back to the graduates right away, but there is one point that concerns the reputation of a university. Do you think that Social media can affect the reputation of a university or an institution? Alternatively, do you think that only the graduates can build a reputation for a university?

P: I am a little bit old-schooled. I do not really base my evaluation on social media, as for me it is just a bunch of non-sense.

R: then how do you base your evaluation of a university?

P: I base it on what is practically happening. When I deal with a graduate- who is not working properly- of a certain university, I conclude that this university is not so good. On the other hand, when I deal with another graduate of another university who is working properly, I conclude that this university supervises and educates properly. Therefore, I get the impression that this university must have never handed their graduates a certificate unless they have worked hard to earn it.

R: does this affect your hiring decisions?

P: for sure.

R: so it is normal that you may hire all graduates of a certain university, and refuse other students just because they are graduated from some other university.

P: No. Never. Suppose I have 10 applicants, five of them are graduated from a well-known university. That does not automatically mean that the other five do not stand a chance. Some other things help us determine who is better. During the interview, for example, punctuality is really important. If the interview is at 9 o'clock, and I find the applicant there from 8:45, it gives a good first impression. However, the university still has an important role in all of these things. As I told you, it makes me know that their graduates has worked hard to earn their certificate.

R: what do you first look for, in an applicant's C.V?

P: I do not think that grades concern me that much. What is important is the places where that applicant has worked in before. For example, if a nurse has worked in King Fahd's ER for 6 months it means that he/she is 100% ready. There are also some simple questions during the interview. We may ask applicants about locations of certain organs in the human body. Some applicants might not know the answer, despite the fact that it is included in their field of study. They should know how to answer such simple questions.

R: so the interview is mainly based on theoretical questions. Nothing practical.

P: we may test them practically as well, but not on real life patients. For example, I ask them to prepare a certain medicine. Applicants should know how to prepare such medicines.

R: do you think that the student who is involved in extra curriculum activities: conferences, researches, and community services, is more beneficial for you?

P: for sure. That is really important. Students should not stop studying and researching just because they have graduated. Doctors are everlasting students, as medicine is improving on a daily basis. The period between graduating and applying for a job is also essential. There is a student who might graduate on June and start looking for a job by September. Another student might graduate on 2016 and apply for a job after two full years. When I ask such students if they had applied for a job in other hospitals, they tell me that they have not, as they were busy. There is a difference between, a person who has spent 2 years far away from his work field, and a person who started looking for a job right after graduation.

R: this might be an indicator to their personalities.

P: for sure. This means that this person is keen on working. This make a huge difference in the medical field.

R: if you have a student's GPA on one hand, and his or soft skills on the other hand. Which one would you prefer? What do you look for in a doctor...his or her personality or his or her grades?

P: whether their theoretical knowledge is good or not, they can learn anytime. Only if they wanted to learn. Soft skills are more important for me. An applicant's knowledge may not be so good, but during the interview, I may sense that he/she really wants to work. Communication skills, personality, and knowing how to deal with people are a priority. Show me that you want to work and learn, I would grant you enough time to train. Only because I know that after this period you will be just fine. Therefore, grades do not concern me as much as skills do. How they deal with patients is a priority as well. Here, in the ER, everybody is always in such a rush. Some doctors may directly get mad when a patient yells at them. Doctors must know how to deal with a furious patient, as no matter what a patient does...he remains our responsibility.

P: suppose you were standing in the rain waiting for a taxicab, and then a moving car splashed some water over you. What would you do? Would you yell at the driver and throw some stones on his car? This is not a very bright solution. Others would say that the driver has already went on his way, so there is no point in yelling at him. It is better to get back home, change clothes, and get back to work. That is the more logical solution. Such small differences tell you a lot about doctors and nurses personalities and attitudes. That is the difference between nurses, who can deal with a furious patient, and other nurses, who get mad at the slightest reaction of any patient.

R: yes, and we should also consider that the patient, unlike me as a nurse, is ill. We should understand his frustration.

P: yes. At the end of the day, the patient is demanding a service. Whether he was frustrated or not, we should not yell back at him. A patient who knows that he is in fault would come back and apologize. Even after a while.

R: and of course the reaction of doctors upon such situations is what determines if a patient would apologize or not.

R: Do you think that our culture here separates between males and females in terms of quality? In addition, do you think that the English language may present a barrier for the Saudi employees?

P: No, it never matter and they both are equal.

R: I mean, does the culture affect the employees while performing as they may have a problem with the patient's gender?

P: No, I have never seen such thing happening.

R: And what about the language?

P: Well, sometimes you can find a person who speaks English very fluently. Other times you may find another one who does not have any idea about it, I wonder how a person like that reached anywhere because medical education is all in English.

R: As a trainee or as an employer?

P: I mean as an employer. When I interview someone, I give him/her a piece of paper and ask him or her to write a hypothetical diagnosis of a patient in English in order to test it.

R: So, you do test their language.

P: Yes, because there are some limits. It may be acceptable if someone has some spelling mistakes. However, the sentence must have a correct structure. To be honest, people who speak English perfectly fluent do exist. I want to tell you something; I studied French and never studied English before. I just knew some common words and expressions such as: good morning, how are you etc... I came here to Saudi Arabia, and I found that people here use it all the time. Therefore, I had to learn it for 6 months in order to develop myself.

R: Does that mean that back then when you came, an interview included nothing in English?

P: Not nothing, but just some basics like the body organs and their functions etc... and of course I was very familiar with such things. However, to be honest I was not able to write a full sentence in English but I learned it 6 months later.

R: The will is what everything is all about; one must have it with persistency to learn.

P: Exactly. There is no difference between a male and a female in the work environment. However, the patients sometimes refuse to be treated by a Saudi nurse for example.

R: So, does the patient want a foreign one?

P: Yes, I reply to him/her that all our nurses and doctors are highly qualified whether they are Saudi or not and if that is suitable, they are more than welcomed and if not, they can find any other hospitals.

R: Why do you think patients think that way?

P: I honestly don't know and I tell them as I told you before and then it is their call whether to leave or stay?

R: Do they stay or leave?

P: Some leave but 80% actually stay. However, I have to ask a female patient whether it suits her or not if the available nurse is a male.

R: Yes definitely.

P: I leave her the choice. Hence, in general the patients themselves might object.

R: So, does that mean that the nurses themselves never object?

P: No, never. To them, they are patients regardless of their gender, nationality etc...

R: Now, we have covered all of the questions related to graduates and employees, and there are some left related to the university itself. As you of course know, we have accreditation in higher education just like CBAHI (The Saudi Central Board for Accreditation of Healthcare Institutions) and JCI (Joint Commission International) in the health sector. We have NCAAA the national accreditation (National Commission for Academic Accreditation and Assessment), and we have international ones. A university follows their standards and according to those standards it is defined whether it is accredited or not. Hence, do you think it adds up to a university when it is accredited especially if it is international accreditation?

P: Well, international accreditation to me is worthless. I even personally think that the local accreditation such as CBAHI for example is much more important than JCI or other.

R: So you prefer the national accreditation. Why is that?

P: Because I have seen how they both perform, and I have also seen the attitude of the people who work in hospital when they have either CBAHI or JCI.

R: How does it differ exactly?

P: Well, JCI has a good attitude but sort of expected, and I have said that before and it was frowned upon. We got the JCI accreditation lately, and I remember that before we got it everyone was so nervous and anxious. However, I was not, and I told a doctor here that we will get it, and we actually got it. CBAHI is very serious and strict.

R: Yes they really are.

P: Inspectors there really makes a person feels intense unlike JCI.

R: Do you mean JCI is somewhat commercial?

P: Honestly, it is completely commercial to me.

R: Do you think international accreditation of universities is also commercial?

P: Yes, because national accreditation is established on values and studies of the same language and speaking the same language means having the same principles and attitudes. For example, people at JCI are different and each one has his/her own perspective unlike CBAHI. I personally think that no health institution can be opened or activated unless it has CBAHI. To me, it is more than enough. We got CBAHI in November and started performing in December. The 10 months before are very crucial to me because I know how the inspectors work. They ask on every little detail.

R: Do you mean they are very detailed there?

P: Yes exactly. Because it is based on very practical basics. The inspector demands the things that help benefit the patient more. I personally think this also applies on universities because national accreditation seek benefiting the students in the first place. Besides, this eliminates the differences that could possibly exist between different universities and their students as they all have the same services.

R: What about the world ranking? Do you think if a university is classified as one of the best 50 ones in the world for example, that will add up to its quality or reputation.

P: Classified on what basis exactly?

R: Well, normally the world ranking is based on things such as the services, the website, the research productivity, the number of researches it carried. Would it make a difference to the quality of a university when you know that it has a high research productivity, or when you know that the teaching staff publish their researches internationally?

P: To be honest no, do you mean only the teaching staff? Aren't the students involved?

R: Well, most probably yes, the students are rarely involved.

P: Well, in that case what is the benefit? When a professor makes a research and the people who study there are not involved in it and benefited from the experience, then it is useless and only for the sake of the university's name. However, if a group of students do make it and a professor or two are supervising them, then that would be okay for me, in fact, it would be beneficial.

R: So, how about the community services? Normally it is believed that the community services are a main feature on which the society builds its opinion of a university's reputation, do you think that this really adds up to a university's quality?

P: No honestly, to me it is commercial.

R: So it never adds up to the quality of a university.

P: No, if it really matters, for example launching an awareness campaign, then make it weekly or monthly. Increasing the attention to improving culture on a regular basis is very important and holding a meeting or a conference for like 4 hours annually does not pay back much. A meeting on increasing the awareness of post-mortem donation will not give the actual picture, but instead making surveys on how people in the street see this matter or even asking them will. For example, asking them questions such as: Are you convinced with the whole matter in the first place? If something happens to you, would you donate? Some people would literally say no because it is religiously forbidden. In fact, it is the exact opposite. All the divine religions encourages such matter especially Islam as you can never find any verse in holy Quran negates it. The same thing with universities when they for example, launch an awareness campaign of diabetes or having Breast Cancer International Day, that definitely will not make a big of a difference because breast cancer or diabetes exist all year. However, if it were weekly or monthly, then it would be effective. Other than that, it is just commercial.

R: Last question, how do you think the medical education would be in the future?

P: Well, I have noticed many changes and developments have happened and the country itself has been more aware that education is for the locals.

R: If I may ask, what are the kind of changes you are talking about?

P: Well, changes in terms of the number of graduate doctors, or the employment of Saudis in local hospitals. Even the studies as for example, in order for specialists to become consultants, they had to make studies for 4 years but now it has been narrowed to 2 years which saves them plenty of time.

R: In your opinion, is it better?

P: Definitely. This country is called Kingdom of Saudi Arabia; therefore, the people who should develop it have to be natives. I will tell you something, I personally believe that what establishes a good state are three things: education, health, and transportation. When education and health are good, and transportation is reachable to everyone, then this state is established properly. In order for that to happen to any state, it has to be done by its locals and this cannot be debatable. When I work in a hospital, I have to have natives working with me. Because they know the culture of their country best, and what it needs. Therefore, universities have to work hard on this matter and provide for its local students everything they need in order for them to stay and develop. I have noticed that recently the financial matters present a problem. In other words, when a consultant, who is the head of his/her department, and carries the responsibility of teaching the trainees, works in an out-patient clinic or a private hospital, then the quality won't ever be good enough.

R: It has been said that such a thing is due to poor salaries of Saudi doctors, which prevents them from being sufficient from working in one hospital.

P: Okay, salaries are not very sufficient but that is not an excuse for a consultant to not deliver all his/her knowledge to trainees or specialists. They need to be stabilized. I personally believe that Saudis should support each other; because your culture; traditions; and attitudes are the same, therefore, there is no place for outsiders.

R: Don't you think that diversity is a good thing?

P: Well, of course, it is a good thing I agree but it is not acceptable when it is over 50%. There are some candidates, who are a little careless and of course, I do not mean everyone.

R: So, do you think that most of the Saudis themselves are careless?

P: No not at all, I meant some. I will tell you something, when I have four applicants and three of them are foreigners and one is Saudi, I interview the Saudi first.

R: So, do you give the Saudi a chance?

P: Yes exactly, because foreigners will eventually return back to their homeland and who will last are the Saudis. Therefore, I interview the Saudi to see what his/her abilities are and what they could possibly add to the hospital. To be honest for example, the people who work here with me are highly qualified. They stay for additional working hours, work hard, and enjoy what they are doing. I also want to mention something that is very crucial. When a doctor or an employee stays off work for 6 or 8 months for whatever reasons and then gets back, it is exactly like retraining them from the start. It is disastrous, and the biggest problem is that they might not be able to handle the pressure and additional working hours.

R: Well, now we have covered all of the questions. Thank you so much for your time. Is there anything you would like to add related to quality in general, universities, or graduates?

P: Well, as I told you before, supervision is what matters the most. Quality depends on the effectiveness of supervision.

R: Do you mean communicating with doctors?

P: Not only that but also with students themselves. They have to be paid a lot of attention.

R: Do you think if a university invites you as a doctor to an event for students, would that be beneficial?

P: Yes, of course. Especially when the doctor, and I'm not talking about myself personally, invited is highly qualified; speaks to freshman students; and illustrates to them their future career life more. Therefore, teaching medicine to students is important, as well as communicating with experienced doctors, skills, and the way a doctor deals with his/her patient. In addition to, the future career life and the place of work. All of this has to be informed to students before they graduate, as the medical institution has its own rules, which they must be familiar with. Another matter that is also has to be paid attention is that when professors have around maybe 50

students and only 4 of them are active, they cannot focus on those 4 only and leave the others. Besides, exams are not the only criterion of a student's efficiency because some circumstances may happen to him/her before the exam day, which leads them to lose marks while in fact they are qualified as any other person. I want to tell you something, your country is very qualified as any other country. The problem is that sometimes some people are not hired in their right places, as you can find a communication graduate who works as a receptionist.

R: Unfortunately, we have a huge gap in employment.

P: Yes, that has to be rearranged and developed in a better way.

R: We hope for the best.

P: Yes, everyone has to be in his or her right place.

R: Definitely, thank you so much for your time.

Appendix E: Online Questionnaire



The Development of a Comprehensive Quality Model in Higher Education: Healthcare Employers' Perspective

You are invited to take part in a research study entitled The Development of a Comprehensive Quality Model in Higher Education: Healthcare Employers' Perspective. Please read this form carefully before agreeing to be part of the study.

The study is conducted by Danah AlThukair as part of her Doctor of Philosophy studies at Durham University, UK. The purpose of this study is to gain insight into how employers of medical graduates perceive quality in higher education. The objective of this study is 1) to develop and validate a new model of quality in higher education based on employers' opinion about the quality of medical education at Saudi universities. Both the attributes of medical students and the attributes of the university will be examined from the expectations of employers. Additionally, 2) the degree of variance between how employers, quality officers, and academics perceive quality in higher education would be investigated.

If you agree to be in this study, you will be asked to complete the below questionnaire about your perception on the quality in higher education along with the essential attributes of high quality medical graduates. The completion of this questionnaire will take approximately 10-12 minutes.

All responses will be kept confidential and anonymous. The records of this study will be

kept secure and private. In any research report that may be published, no information will be included that will make it possible to identify you individually.

Gender *

Nationality *

Workplace *

- ☐ Private Sector Hospital
- ☐ Public/Government Sector Hospital
- ☐ University Hospital
- ☐ University
- ☐ Other (please specify):

Years of Work Experience *

- ☐ 0-4 Years

- ☐ 5-10 Years
- ☐ 10-20 Years
- ☐ More than 20 Years

2. Academic

Professional Rank *

- ☐ Administrator
- ☐ Lecturer
- ☐ Assistant professor
- ☐ Associate professor
- ☐ Professor
- ☐ Quality Officer
- ☐ Other (please specify):

Previous Work Experience Overseas *

- ☐ No

☐ Yes (please specify):

I am aware that because of the nature of your job you will not be able to answer all the questions so please feel free to tick the not applicable option in this case.

3. Employers

Professional Rank *

☐ Resident

☐ Registrar

☐ Consultant

☐ Top-level Manager

☐ Medical Director

☐ Quality Officer

☐ Other (please specify):

Area of Medical Speciality

Country of Medical Degree *

Previous Work Experience Abroad *

☐

No

☐

Yes (please specify):

4. Evaluation of University Quality Attributes

From your own perspective, please evaluate the importance of attributes of the quality of universities. How important do you find the following attributes?

University Administration *

	Not Important At All	Not Important	Neutral	Important	Very Important
Clear university mission, vision and goals	☐	☐	☐	☐	☐
Well-structured university policies,	☐	☐	☐	☐	☐

	Not Important At All	Not Important	Neutral	Important	Very Important
rules and strategic plan					
Effective system for budgeting and financial accountability	☐	☐	☐	☐	☐
Clear policies and standards for student admission	☐	☐	☐	☐	☐

Infrastructure *

	Not Important At All	Not Important	Neutral	Important	Very Important
Adequate university infrastructure (buildings, classroom, student accommodation, library....)	☐	☐	☐	☐	☐
Sufficient laboratories, computer and technology equipment, and materials for academic programs	☐	☐	☐	☐	☐

	Not Important At All	Not Important	Neutral	Important	Very Important
Effective mechanisms to preserve the rights of people with special needs	☐	☐	☐	☐	☐

Student Support Services *

	Not Important At All	Not Important	Neutral	Important	Very Important
Mechanism available to ensure students satisfaction	☐	☐	☐	☐	☐
Academic support available to students	☐	☐	☐	☐	☐
Psychological support available to students	☐	☐	☐	☐	☐
A system to identify gifted, talented, creative and underachiever students	☐	☐	☐	☐	☐
Ability to attract international students	☐	☐	☐	☐	☐

Faculty Quality *

	Not Important At All	Not Important	Neutral	Important	Very Important
Sufficient number of faculty members	☐	☐	☐	☐	☐
Effective development plan of faculty members' teaching capabilities and skills	☐	☐	☐	☐	☐
Effective mechanisms for faculty exchange between local and international universities	☐	☐	☐	☐	☐

Teaching Quality *

	Not Important At All	Not Important	Neutral	Important	Very Important	Not Applicable
Clear policies and procedures for the design of academic programs and student's assessment	☐	☐	☐	☐	☐	☐
Availability of wide range of specialization and elective courses	☐	☐	☐	☐	☐	☐

	Not Important At All	Not Important	Neutral	Important	Very Important	Not Applicable
Active participation of student in their learning process	☐	☐	☐	☐	☐	☐
Student exchange program for exposure to different teaching environments at local and international universities	☐	☐	☐	☐	☐	☐
Medical specialty decision made at the earliest possible stage	☐	☐	☐	☐	☐	☐
Teaching strategies are designed according to the specialty at the earliest possible stage	☐	☐	☐	☐	☐	☐
Effective parallel teaching structure, where teaching theoretical and practical aspects are aligned	☐	☐	☐	☐	☐	☐
Adequate medical speciality plan to fill the gap in Saudi hospitals	☐	☐	☐	☐	☐	☐

Courses and Curriculum *

	Not Important At All	Not Important	Neutral	Important	Very Important	Not Applicable
Teaching materials are up to date and aligned with the needs of the community	☐	☐	☐	☐	☐	☐
Incorporation of surgical courses early on in the academic year	☐	☐	☐	☐	☐	☐
Distance education courses	☐	☐	☐	☐	☐	☐
Incorporationon of quality management and hospital accreditation courses as part of the curriculum	☐	☐	☐	☐	☐	☐

Training *

	Not Important At All	Not Important	Neutral	Important	Very Important	Not Applicable
Mechanism to evaluate trainers and location of training before assigning students (safety, facilities available, and medical equipment)	☐	☐	☐	☐	☐	☐
Training on innovative techniques and equipment	☐	☐	☐	☐	☐	☐
Training on traditional techniques and equipment	☐	☐	☐	☐	☐	☐
Availability of university hospital for students' training	☐	☐	☐	☐	☐	☐
Adequate follow-up and supervision for students training at hospitals	☐	☐	☐	☐	☐	☐
Scientific Research *						

	Not Important At All	Not Important	Neutral	Important	Very Important
Public recognition of university research work quality	☐	☐	☐	☐	☐
Collaboration with international institutions to conduct research studies	☐	☐	☐	☐	☐
Collaboration between universities and hospitals in conducting scientific research studies	☐	☐	☐	☐	☐
Mechanisms to develop research skills of teaching staff	☐	☐	☐	☐	☐
Cultivating an environment which encourages innovation and creativity for students, teaching and administrative staff	☐	☐	☐	☐	☐

University collaboration and interaction with stakeholder *

	Not Important At All	Not Important	Neutral	Important	Very Important
Participation of stakeholders (teaching staff, employer, and students) in decision-making processes	☐	☐	☐	☐	☐
Culture of collaboration between universities and Saudi Commission for Health Specialties	☐	☐	☐	☐	☐

Interaction with the community *

	Not Important At All	Not Important	Neutral	Important	Very Important
Universities allow the community to benefit from its various facilities and resources (e.g. library, sport facilities, classrooms, and laboratories)	☐	☐	☐	☐	☐
Effective mechanism to serve the community	☐	☐	☐	☐	☐

	Not Important At All	Not Important	Neutral	Important	Very Important
University organization of periodic scientific conferences	☐	☐	☐	☐	☐

Quality Assurance and Academic Accreditation *

	Not Important At All	Not Important	Neutral	Important	Very Important
Effective quality assurance and continuous evaluation system	☐	☐	☐	☐	☐
International accredited status of universities	☐	☐	☐	☐	☐
National accredited status of universities	☐	☐	☐	☐	☐

University Image *

	Not Important At All	Not Important	Neutral	Important	Very Important
World ranking of universities	☐	☐	☐	☐	☐

	Not Important At All	Not Important	Neutral	Important	Very Important
Being a leading University in the field	☐	☐	☐	☐	☐
National reputation	☐	☐	☐	☐	☐

How do universities build their reputation?

*

- ☐ ☐Media and social media
- ☐ ☐Academic accreditation status
- ☐ ☐World ranking
- ☐ ☐Research Productivity
- ☐ ☐Graduate working at hospitals
- ☐ ☐Community services
- ☐ ☐Engagement with employers
- ☐ ☐International activity of universities
- ☐ All of the above
- ☐ Other (please specify):

It is crucial for employers to be involved in higher education in the areas of: *

- ☐ Teaching
- ☐ Student Evaluation
- ☐ Student Training
- ☐ Academic events and Conferences
- ☐ Community Services
- ☐ Planning and developing academic program, courses and curriculum
- ☐ All of the Above
- ☐ Not important

6. Graduate Quality Attributes

Toward the end of their studies, medical students successfully develop and possess the below qualifications and competencies. How important do you find the following attributes?

Qualification and Competency *

	Not Important At All	Not Important	Neutral	Important	Very Important
Solid medical theoretical background	☐	☐	☐	☐	☐
Solid medical practical background	☐	☐	☐	☐	☐
Deal with patients with special needs	☐	☐	☐	☐	☐
Participation in voluntary work	☐	☐	☐	☐	☐
Participation in academic events and conferences	☐	☐	☐	☐	☐
Participation in community activities	☐	☐	☐	☐	☐
English language proficiency	☐	☐	☐	☐	☐
Computer literacy	☐	☐	☐	☐	☐
Research skills	☐	☐	☐	☐	☐
Scholarship opportunities to study abroad	☐	☐	☐	☐	☐

Employment Readiness *

	Not Important At All	Not Important	Neutral	Important	Very Important	Not Applicable
Participation of students in career orientation program at university	☐	☐	☐	☐	☐	☐
Development of CV and preparation for job interviews	☐	☐	☐	☐	☐	☐
Ability of medical graduate to train others	☐	☐	☐	☐	☐	☐
Sufficient work experience of medical graduate	☐	☐	☐	☐	☐	☐
Ability of medical graduate to hold the full responsibility of patients	☐	☐	☐	☐	☐	☐

Please tick on **the 7 most important soft skills** that medical graduates should possess toward the end of their studies: *

☐ ☐ Cognitive Flexibility

☐ ☐ Commitment to Work

- ☐ □ Communication skills
- ☐ □ Complex Problem Solving
- ☐ □ Confidence
- ☐ □ Continuous Learning
- ☐ □ Critical Thinking
- ☐ □ Emotional Intelligence
- ☐ □ Interpersonal Skills
- ☐ □ Judgment and Decision Maker
- ☐ □ Leadership Skills
- ☐ □ Negotiation
- ☐ □ People Management
- ☐ □ Professionalism
- ☐ □ Self-improvement
- ☐ □ Time Management
- ☐ □ Work under pressure
- ☐ □ Other (please specify):

Are there any other comments or suggestions about any elements of any aspects of quality of higher education and medical graduate?

Participant Consent *

- ☐ I give the consent to participate in this study
- ☐ I have read the participant information sheet and understand the information provided
- ☐ I understand that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research

Appendix F: Reliability Test Results for the Piloted Questionnaire

Quality in Medical Education

University Administration		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items ^a	N of Items
.156	-.092	5
Infrastructure Quality		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.261	.391	4
Student Support Services		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.789	.795	6
Faculty Member Quality		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.218	.224	4
Teaching Quality		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.829	.835	8
Courses and Curriculum Quality		

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.391	.080	4
Medical Training Quality		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.641	.616	7
Scientific Research Quality		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.392	.454	6
Collaboration and Interaction Quality		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.818	.852	6
Interaction with the Community		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.612	.485	5
Quality Assurance and Accreditation		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items

.536	.482	4
University Image		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.857	.857	3

Quality of Medical Graduate

Qualification and Competency		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.806	.828	9
Employment Readiness		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.770	.813	7

Appendix G: Invitational Message to the Questionnaire

Good day,

This is Danah AlThukair, a PhD student at Durham University in the UK. You are invited to take part in a research study entitled **The Development of a Comprehensive Quality Model in Higher Education: Healthcare Employers' Perspective.**

The aim of this study is to develop a new model of quality in higher education based on employers' opinions about the quality of medical education at Saudi universities. Both the attributes of medical students and the attributes of the university will be examined from the expectations of employers.

If you agree to take part in this study, please complete the below questionnaire: (English version)

<https://www.smartsurvey.co.uk/s/QUALITYMODEL/>

السلام عليكم ورحمة الله وبركاته

أنت مدعو للمشاركة في دراسة بحثية بعنوان "بناء نموذج جودة شامل في التعليم العالي: من وجهة نظر أصحاب العمل في القطاع الصحي" من قبل طالبة الدكتوراة دانة الذكير من جامعة درم في بريطانيا. يتمثل الغرض من هذه الدراسة بناء نموذج جديد للجودة في التعليم العالي في المملكة العربية السعودية من وجهة نظر أرباب العمل في القطاع الصحي. يتضمن النموذج على كل من خصائص خريجي الكليات الطبية وخصائص الجامعة بناءً على وجهات نظر أرباب العمل.

في حال الموافقة على المشاركة في هذه الدراسة، سيُطلب منك تعبئة الاستبيان المدرج أدناه: (النسخة العربية)

<https://www.smartsurvey.co.uk/s/arQUALITYMODEL/>

Thank you,

Danah AlThukair

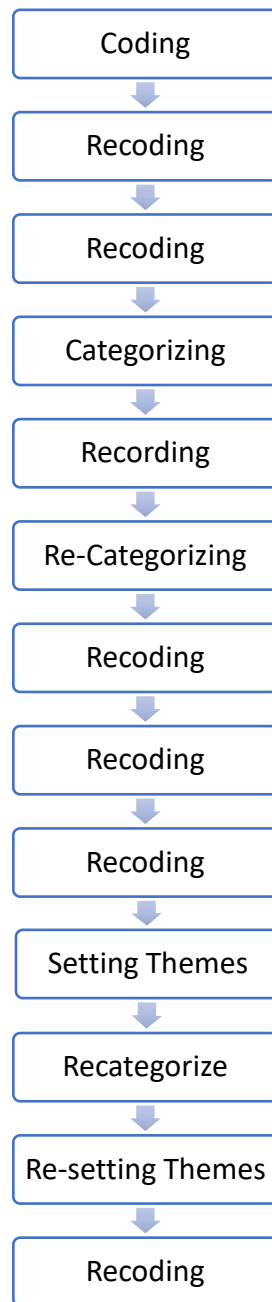
PhD Student, School of Education, Durham University

Lecturer, Deanship of Quality and Academic Accreditation, Imam Abdulrahman Bin Faisal University

+966503829943

+44751940440

Appendix H: Cycle of Data Thematic Analysis



Appendix I: Ethics Approval from Durham University and Imam Abdulrahman Bin Faisal
University

31/05/18

Danah AlThukair
danah.k.althukair@durham.ac.uk

Dear Danah,

The Development of a Holistic Quality Model in Higher Education: Employer Perspective

Reference: 3147

I am pleased to inform you that your ethics application for the above research project has been approved by the School of Education Ethics Committee.

May we take this opportunity to wish you good luck with your research.

Yours sincerely,



Dr Nadin Beckmann
School of Education Ethics Committee Chair

Kingdom of Saudi Arabia
Ministry of Education
Imam Abdulrahman Bin Faisal
University
Office of the Vice President for
Research & Higher Studies



المملكة العربية السعودية
وزارة التعليم
جامعة الإمام عبد الرحمن بن فيصل
وكالة الجامعة للدراسات
العلمية والبحث العلمي

اللجنة الدائمة لأخلاقيات البحث على المخلوقات الحية
Institutional Review Board

IRB Number	IRB -PGS-2018-23-186	أيرب جيس-١٨٦-٢٣-٢٠١٨
Project Title	The Development of a Holistic Quality Model in Higher Education: Employer Perspective	
Principal Investigator	Postgraduate Student \ Danah Althakair	
Supervisor	Dr. Ahmed Alkuwaiti	
College / Center	Deanship of Quality and Academic Accreditation	Department
		Deanship of Quality and Academic Accreditation
Approval Date	27/09/2018	

The application was reviewed and approved at Imam Abdulrahman Bin Faisal University IRB meeting on Thursday, September 27, 2018.

Approval is given for one year from the date of approval. Projects, which have not commenced within six months of the original approval, must be re-submitted to the University Institutional Review Board (IRB) Committee. If you are unable to complete your research within the validation period, you will be required to request an extension from the IRB Committee.

On completion of the research, the Principal Investigator is required to advise the Institutional Review Board if any changes are made to the protocol, a revised protocol must be submitted to the Institutional Review Board for reconsideration.

Approval is given on the understanding that the "Guidelines for Ethical Research Practice" are adhered to. Where required, a signed written consent form must be obtained from each participant in the study group.

Dean of Scientific Research
Chairman of the Institutional Review Board

Dr. Naif Nasser Almasoud



Stamp

- CC. - Dean
Deanship of Scientific Research
- Director General
King Fahd Hospital of the University
- Director
Center for Research and Medical Consultations
- Supervisor General for Quality and Safety
King Fahd Hospital of the University
- Director
Monitoring Office for Research and Research Ethics
- Director
Pharmacy @ KFHU

Appendix J: Interview Consent Form and Participant Sheet

Declaration of Informed Consent

- I agree to participate in this study, the purpose of which is to develop a new model of quality in higher education based on employers' opinion about medical educational service quality prevailing in Saudi Universities.
- I have read the participant information sheet and understand the information provided.
- I have been informed that I may decline to answer any questions or withdraw from the study without penalty of any kind.
- I have been informed that data collection will involve the use of audio recording devices for late transcription.
- I have been informed that all of my responses will be kept confidential and secure, and that I will not be identified in any report or other publication resulting from this research.
- I have been informed that the investigator will answer any questions regarding the study and its procedures. Danah AlThukair, School of Education, Durham University can be contacted via email: danah.k.althukair@durham.ac.uk or telephone: 00966503829943.
- I will be provided with a copy of this form for my records.

Any concerns about this study should be addressed to the School of Education Ethics Sub-Committee, Durham University via email to ed.ethics@durham.ac.uk.

Date	Participant Name (please print)	Participant Signature

I certify that I have presented the above information to the participant and secured his or her consent.

Date	Signature of Investigator

/ 09 /2018

Participant Information Sheet

Title: The Development of Holistic Quality Model in Higher Education: Employer Perspective

You are invited to take part in a research study entitled The Development of Holistic Quality Model in Higher Education: Employer Perspective. Please read this form carefully and ask any questions you may have before agreeing to be part in the study.

The study is conducted by Danah AlThukair as part of her Doctor of Philosophy studies at Durham University. This research project is supervised by Dr Julie Rattray julie.rattray@durham.ac.uk from the School of Education at Durham University. The purpose of this study is to gain an insight of how employers of medical graduates perceive quality in higher education. In addition, the study aims to develop a new model of quality in higher education based on employers' opinion about medical educational service quality prevailing in Saudi Universities. Moreover, the degree of variance between the perceptions of employers and quality officers at Saudi universities on the quality in higher education would be investigated.

If you agree to be in this study, you will be asked to be interviewed about your perception on the quality in higher education along with the essential attributes of high quality universities and graduates. Your participation in this study will take approximately 1 hour.

The interview will be audio recorded for late transcription. All responses you give or other data collected will be kept confidential. The records of this study will be kept secure and private. All files containing any information you give are password protected. In any research report that may be published, no information will be included that will make it possible to identify you individually. There will be no way to connect your name to your responses at any time during or after the study.

It is not the intention that any participant feels stressed by this process. If, in the course of interviews, you are uncomfortable with any of the questions asked, please decline to answer. You are free to withdraw from this study at any time without any negative consequences for you -simply contact me to say that you wish to take no further part. It is anticipated that all data collected during the course of this study will be retained for a period of 4 years following successful completion of the PhD degree.

If you have any questions, requests or concerns regarding this research, please contact me via email at Danah AlThukair, danah.k.althukair@durham.ac.uk or by telephone at +966503829943

This study has been reviewed and approved by the School of Education Ethics Sub-Committee at Durham University (date of approval: 31/05/2018)

Danah AlThukair
Doctor of Philosophy in Education
Durham University
School of Education
11 St Anns Quay, 118 Quayside
Newcastle NE1 3BB
Mobile: KSA +966 503829943 - UK +44 7519404410
Email: danah.k.althukair@durham.ac.uk

Leazes Road
Durham City, DH1 1TA

Telephone +44 (0)191 334 2000 Fax +44 (0)191 334 8311

www.durham.ac.uk

Durham University is the trading name of the University of Durham

Appendix K: Exploratory Factor Analysis – Quality of Medical Education

FACTOR

/VARIABLES InfrastructureQ1 InfrastructureQ2 InfrastructureQ3 StudentServicesQ1
StudentServicesQ2

StudentServicesQ3 StudentServicesQ4 FacultyQualityQ1 FacultyQualityQ2
UniversityAdministrationQ1

UniversityAdministrationQ2 UniversityAdministrationQ3 UniversityAdministrationQ4
StudentServicesQ5

FacultyQualityQ3 TeachingQualityQ1 TeachingQualityQ2 TeachingQualityQ3
TeachingQualityQ4

TeachingQualityQ5 TeachingQualityQ6 TeachingQualityQ7 TeachingQualityQ8
CoursesCurriculumQ1

CoursesCurriculumQ2 CoursesCurriculumQ3 CoursesCurriculumQ4
MedicalTrainingQ1 MedicalTrainingQ2

MedicalTrainingQ3 MedicalTrainingQ4 MedicalTrainingQ5 ScientificResearchQ1
ScientificResearchQ2

ScientificResearchQ3 ScientificResearchQ4 ScientificResearchQ5
UniversitycollaborationInteractionQ1

UniversitycollaborationInteractionQ2 InteractionWithCommunityQ1
InteractionWithCommunityQ2

InteractionWithCommunityQ3 QualityAssuranceAccreditationQ1
QualityAssuranceAccreditationQ2

QualityAssuranceAccreditationQ3 UniversityImageQ1 UniversityImageQ2
UniversityImageQ3

/MISSING LISTWISE

/ANALYSIS InfrastructureQ1 InfrastructureQ2 InfrastructureQ3 StudentServicesQ1
StudentServicesQ2

StudentServicesQ3 StudentServicesQ4 FacultyQualityQ1 FacultyQualityQ2
UniversityAdministrationQ1

UniversityAdministrationQ2 UniversityAdministrationQ3 UniversityAdministrationQ4
StudentServicesQ5

FacultyQualityQ3 TeachingQualityQ1 TeachingQualityQ2 TeachingQualityQ3
TeachingQualityQ4

TeachingQualityQ5 TeachingQualityQ6 TeachingQualityQ7 TeachingQualityQ8
 CoursesCurriculumQ1
 CoursesCurriculumQ2 CoursesCurriculumQ3 CoursesCurriculumQ4
 MedicalTrainingQ1 MedicalTrainingQ2
 MedicalTrainingQ3 MedicalTrainingQ4 MedicalTrainingQ5 ScientificResearchQ1
 ScientificResearchQ2
 ScientificResearchQ3 ScientificResearchQ4 ScientificResearchQ5
 UniversitycollaborationInteractionQ1
 UniversitycollaborationInteractionQ2 InteractionWithCommunityQ1
 InteractionWithCommunityQ2
 InteractionWithCommunityQ3 QualityAssuranceAccreditationQ1
 QualityAssuranceAccreditationQ2
 QualityAssuranceAccreditationQ3 UniversityImageQ1 UniversityImageQ2
 UniversityImageQ3
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Factor Analysis

Notes

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	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.

Syntax	FACTOR
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	InfrastructureQ2
	InfrastructureQ3
	StudentServicesQ1
	StudentServicesQ2
	StudentServicesQ3
	StudentServicesQ4
	FacultyQualityQ1
	FacultyQualityQ2
	UniversityAdministrationQ1
	UniversityAdministrationQ2
	UniversityAdministrationQ3
	UniversityAdministrationQ4
	StudentServicesQ5
	FacultyQualityQ3
	TeachingQualityQ1
	TeachingQualityQ2
	TeachingQualityQ3
	TeachingQualityQ4
	TeachingQualityQ5
	TeachingQualityQ6
	TeachingQualityQ7
	TeachingQualityQ8
	CoursesCurriculumQ1
	CoursesCurriculumQ2
	CoursesCurriculumQ3
	CoursesCurriculumQ4
	MedicalTrainingQ1
	MedicalTrainingQ2
	MedicalTrainingQ3
	MedicalTrainingQ4
	MedicalTrainingQ5
	ScientificResearchQ1
	ScientificResearchQ2
	ScientificResearchQ3
	ScientificResearchQ4
	ScientificResearchQ5

	UniversitycollaborationInter actionQ1
	UniversitycollaborationInter actionQ2
	InteractionWithCommunity Q1
	InteractionWithCommunity Q2
	InteractionWithCommunity Q3
	QualityAssuranceAccreditat ionQ1
	QualityAssuranceAccreditat ionQ2
	QualityAssuranceAccreditat ionQ3
	UniversityImageQ1
	UniversityImageQ2
	UniversityImageQ3
	/MISSING LISTWISE
	/ANALYSIS
	InfrastructureQ1
	InfrastructureQ2
	InfrastructureQ3
	StudentServicesQ1
	StudentServicesQ2
	StudentServicesQ3
	StudentServicesQ4
	FacultyQualityQ1
	FacultyQualityQ2
	UniversityAdministrationQ1
	UniversityAdministrationQ2
	UniversityAdministrationQ3
	UniversityAdministrationQ4
	StudentServicesQ5
	FacultyQualityQ3
	TeachingQualityQ1
	TeachingQualityQ2
	TeachingQualityQ3
	TeachingQualityQ4

	TeachingQualityQ5
	TeachingQualityQ6
	TeachingQualityQ7
	TeachingQualityQ8
	CoursesCurriculumQ1
	CoursesCurriculumQ2
	CoursesCurriculumQ3
	CoursesCurriculumQ4
	MedicalTrainingQ1
	MedicalTrainingQ2
	MedicalTrainingQ3
	MedicalTrainingQ4
	MedicalTrainingQ5
	ScientificResearchQ1
	ScientificResearchQ2
	ScientificResearchQ3
	ScientificResearchQ4
	ScientificResearchQ5
	UniversitycollaborationInter actionQ1
	UniversitycollaborationInter actionQ2
	InteractionWithCommunity Q1
	InteractionWithCommunity Q2
	InteractionWithCommunity Q3
	QualityAssuranceAccreditat ionQ1
	QualityAssuranceAccreditat ionQ2
	QualityAssuranceAccreditat ionQ3
	UniversityImageQ1
	UniversityImageQ2
	UniversityImageQ3
	/PRINT UNIVARIATE
	INITIAL CORRELATION
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		AIC EXTRACTION ROTATION /FORMAT SORT BLANK(.40) /PLOT EIGEN /CRITERIA MINEIGEN(1) ITERATE(35) /EXTRACTION PAF /CRITERIA ITERATE(35) DELTA(0) /ROTATION OBLIMIN /SAVE REG(ALL) /METHOD=CORRELATIO N.
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	FAC2_46	Regression factor score 2
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	FAC4_46	Regression factor score 4
	FAC5_46	Regression factor score 5
	FAC6_46	Regression factor score 6
	FAC7_46	Regression factor score 7
	FAC8_46	Regression factor score 8
	FAC9_46	Regression factor score 9
	FAC10_46	Regression factor score 10

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
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INF2	4.4104	.59576	251
INF3	4.3745	.59598	251
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SSS2	4.3625	.57274	251
SSS3	4.2709	.59187	251
SSS4	4.2869	.57740	251
FQ1	4.4462	.63253	251
FQ2	4.4542	.58042	251
UA1	3.7649	1.20852	251
UA2	3.8765	1.21519	251
UA3	3.8167	1.22567	251
UA4	3.9641	1.13609	251
SSS5	3.6972	1.01388	251
FQ3	4.1195	.79603	251
TQ1	4.4422	.63847	251
TQ2	4.2669	.60371	251
TQ3	4.3267	.58382	251
TQ4	4.0239	.83871	251
TQ5	3.8367	1.01647	251
TQ6	3.8685	.98927	251
TQ7	4.4064	.59515	251
TQ8	4.4263	.64927	251
CC1	4.6295	.55332	251
CC2	3.7092	.98340	251

CC3	3.3586	1.08024	251
CC4	4.1753	.72191	251
MT1	4.4462	.63253	251
MT2	4.5378	.55997	251
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SR3	3.9801	.93145	251
SR4	4.0398	.94149	251
SR5	4.2510	.78278	251
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COL2	4.3386	.71614	251
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INTER2	3.8486	.95131	251
INTER3	3.8924	.97179	251
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QA2	4.4024	.53799	251
Q13	4.4343	.54283	251
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UI2	4.3068	.61767	251
UI3	4.4024	.53799	251

Correlation Matrix^a

		I N F 1	I N F 2	I N F 3	S S 1	S S 2	S S 3	S S 4	F Q 1	F Q 2	U A 1	U A 2	U A 3	U A 4	S S 5	F Q 3	T Q 1	T Q 2	T Q 3	T Q 4	T Q 5	T Q 6	T Q 7	T Q 8	C C 1
Cor rela tion	IN F1	1	. 7 0 5 0	. 6 8 1	. 5 8 1	. 6 0 5	. 4 8 3	. 3 9 6	. 5 2 5	. 5 2 9	. 3 2 0	. 3 9 0	. 4 0 2	. 4 5 0	. 2 6 0	. 3 5 6	. 3 1 5	. 2 2 3	. 1 5 2	. 1 7 3	. 0 4 5	. 0 6 6	. 2 3 1	. 1 4 1	. 2 4 1
	IN F2	. 7 6 5 0	1	. 6 8 1	. 5 2 0	. 6 0 6	. 4 6 6	. 4 4 7	. 5 9 5	. 5 9 2	. 3 4 6	. 3 9 6	. 4 4 3	. 4 4 1	. 3 1 2	. 4 4 0	. 3 2 0	. 1 7 2	. 2 4 6	. 2 1 9	. 0 1 5	. 0 1 8	. 2 5 0	. 1 5 6	. 2 5 0
	IN F3	. 6 8 1	. 6 8 1	1	. 6 3 8 0	. 6 2 0	. 5 7 3	. 5 4 7	. 4 3 6	. 5 3 5	. 4 1 7	. 4 4 5	. 4 8 3	. 4 3 9	. 3 0 1	. 4 2 0	. 3 7 2	. 2 2 1	. 1 8 7	. 2 2 5	. 0 9 1	. 1 3 1	. 2 0 1	. 1 4 4	. 2 1 6
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	S S S2	. 6 0 5	. 6 0 6	. 6 2 0	. 7 5 7 0	1	. 7 2 4	. 6 1 6	. 4 7 9	. 5 0 1	. 3 7 2	. 4 4 4	. 4 5 4	. 4 5 0	. 2 9 3	. 3 9 6	. 3 5 8	. 2 1 6	. 1 9 5	. 2 3 2	. 1 5 7	. 1 9 0	. 1 8 2	. 1 6 9	. 1 4 3
	S S S3	. 4 8 3	. 4 6 6	. 5 7 3	. 6 5 8	. 7 2 4	1	. 5 0 8 0	. 4 5 6	. 4 9 0	. 2 9 1	. 3 2 5	. 3 5 5	. 3 3 0	. 2 7 7	. 3 5 8	. 3 3 8	. 1 3 3	. 2 0 6	. 2 2 9	. 1 4 0	. 2 3 2	. 2 0 9	. 2 1 9	. 1 6 1
	S S S4	. 3 9 6	. 4 4 7	. 5 4 7	. 5 4 3	. 6 1 6	. 5 6 8	1	. 4 3 7	. 4 2 1	. 2 5 2	. 3 0 7	. 3 5 2	. 3 3 9	. 3 8 1	. 3 9 5	. 2 8 4	. 1 5 8	. 2 1 9	. 2 4 2	. 1 6 2	. 1 7 8	. 2 6 5	. 1 8 5	. 1 7 1

	F Q 1	. 5 2 5	. 5 9 5	. 4 4 6	. 4 2 3	. 4 7 9	. 4 5 6	. 4 3 7	1 .0 0 0	. 5 9 0	. 2 3 2	. 2 5 9	. 2 8 1	. 2 7 8	. 3 9 2	. 3 4 6	. 3 5 1	. 2 6 3	. 2 1 0	. 1 3 1	- .0 1 7	. 0 2 4	. 1 3 3	. 0 7 1	. 2 3 1
	F Q 2	. 5 2 9	. 5 9 2	. 5 3 5	. 5 2 6	. 5 0 1	. 4 9 0	. 4 2 1	. 5 9 0	1 .0 0 0	. 3 3 0	. 3 4 1	. 4 1 0	. 3 8 3	. 2 9 6	. 4 2 7	. 3 8 4	. 3 1 5	. 3 3 9	. 2 3 2	. 0 0 4	. 0 9 0	. 2 2 8	. 1 2 1	. 2 7 7
	U A1	. 3 2 0	. 3 4 6	. 4 1 7	. 3 3 3	. 3 7 2	. 2 9 1	. 2 5 2	. 2 3 2	. 3 3 0	1 .0 0 0	. 9 0 6	. 8 6 2	. 8 0 7	. 2 9 8	. 1 7 5	. 3 0 1	. 0 2 6	. 0 1 3	. 1 7 9	. 2 8 1	. 3 0 9	- .0 3 9	- .0 2 5	- .1 3
	U A2	. 3 9 0	. 3 9 6	. 4 4 5	. 3 5 5	. 4 4 4	. 3 2 5	. 3 0 7	. 2 5 9	. 3 4 1	. 9 0 6	1 .0 0 0	. 9 2 5	. 8 6 3	. 3 5 6	. 2 1 4	. 3 2 3	- .0 1 5	. 0 0 6	. 2 0 7	. 2 4 3	. 3 0 3	- .0 9 1	. 0 0 6	- .1 4
	U A3	. 4 0 2	. 4 4 3	. 4 8 3	. 3 7 8	. 4 5 4	. 3 5 5	. 3 5 2	. 2 8 1	. 4 1 0	. 8 6 2	. 9 2 5	1 .0 0 0	. 8 3 7	. 3 7 7	. 2 6 4	. 2 9 8	. 0 2 3	. 0 3 9	. 2 4 9	. 2 8 1	. 3 2 6	- .0 4 6	. 2 8 6	- .5 3
	U A4	. 4 5 0	. 4 4 1	. 4 3 9	. 3 5 9	. 4 5 0	. 3 3 0	. 3 3 9	. 2 7 8	. 3 8 3	. 8 0 7	. 8 6 3	. 8 3 7	1 .0 0 0	. 3 7 6	. 2 5 2	. 3 0 9	. 0 3 2	. 0 2 4	. 2 6 1	. 2 1 7	. 2 4 8	- .0 4 3	. 2 4 8	- .6 6
	S S S5	. 2 6 0	. 3 1 2	. 3 0 1	. 2 7 5	. 2 9 3	. 2 7 7	. 3 8 1	. 3 9 2	. 2 9 6	. 2 9 8	. 3 5 6	. 3 7 7	. 3 7 6	1 .0 0 0	. 4 1 2	. 1 8 3	. 0 8 0	. 0 3 3	. 4 3 7	. 0 3 3	. 0 2 4	. 0 0 6	- .0 0 4	. 0 0 3

	F Q 3	. 3 5 6	. 4 4 4	. 4 2 0	. 4 4 4	. 3 9 6	. 3 5 5	. 3 9 5	. 3 4 6	. 4 2 7	. 1 7 5	. 2 1 4	. 2 6 4	. 2 5 2	. 4 1 2	1 .0 0 0	. 2 5 0	. 1 8 3	. 3 2 0	. 4 1 5	. 0 9 3	. 0 2 9	. 1 4 8	. 0 7 9	. 1 5 6	. 2 4 2	. 1 3 4	. 2 5 6	. 1 6 4	. 1 6 5
	T Q 1	. 3 1 5	. 3 2 0	. 3 7 2	. 3 7 8	. 3 5 8	. 3 3 8	. 2 8 4	. 3 5 1	. 3 8 4	. 3 0 1	. 3 2 3	. 2 9 8	. 3 0 9	. 1 8 3	. 2 5 0	1 .0 0 0	. 4 0 9	. 4 0 5	. 2 1 9	. 1 4 9	. 1 8 7	. 1 4 6	. 1 0 0	. 2 4 0	. 1 2 0	. 3 0 0	. 1 8 0	. 3 1 8	
	T Q 2	. 2 2 3	. 1 7 2	. 2 2 1	. 2 7 1	. 2 1 6	. 1 3 3	. 1 5 8	. 2 6 3	. 3 1 5	. 0 2 6	- .0 1 5	. 0 2 3	. 0 3 2	. 0 8 0	. 1 8 3	. 4 0 9	1 .0 0 0	. 3 4 2	. 2 0 9	. 1 8 2	. 2 3 3	. 0 8 5	. 2 6 7	. 2 3 5	. 1 3 7	. 1 0 1	. 2 0 1		
	T Q 3	. 1 5 2	. 2 4 6	. 1 8 7	. 1 7 8	. 1 9 5	. 2 0 6	. 2 1 9	. 2 1 0	. 3 3 9	. 0 1 3	. 0 0 6	. 0 3 9	. 0 2 4	. 0 3 3	. 3 2 0	. 4 0 5	. 3 4 2	1 .0 0 0	. 3 0 3	. 1 5 1	. 1 6 2	. 1 1 4	. 3 2 8	. 3 4 3	. 3 8 5	. 2 6 5			
	T Q 4	. 1 7 3	. 2 1 2	. 2 2 2	. 2 6 7	. 2 3 2	. 2 2 9	. 2 4 2	. 1 3 1	. 2 3 2	. 1 7 9	. 2 0 7	. 2 4 9	. 2 6 1	. 4 3 7	. 4 1 5	. 2 1 9	. 2 0 9	. 3 0 3	1 .0 0 0	. 1 6 9	. 1 8 1	. 1 4 1	. 1 1 4	. 0 8 4	. 0 1 4	. 1 8 0	. 0 1 1		
	T Q 5	. 0 4 5	. 0 1 9	. 0 9 5	. 1 8 3	. 1 5 7	. 1 4 0	. 1 6 2	- .0 1 7	. 0 0 4	. 2 8 1	. 2 4 3	. 2 8 1	. 2 1 7	. 0 3 3	. 0 9 3	. 1 4 9	. 1 8 2	. 1 5 1	. 1 6 9	. 1 9 0	1 .0 0 0	. 8 7 0	. 3 0 9	. 3 0 6	. 3 0 6	- .0 4 4			
	T Q 6	. 0 6 6	. 0 5 8	. 1 3 1	. 2 3 7	. 1 9 0	. 2 3 2	. 1 7 8	. 0 2 4	. 0 9 0	. 3 0 9	. 3 0 3	. 3 2 6	. 2 4 8	. 0 2 4	. 1 3 2	. 1 8 7	. 2 3 3	. 1 1 6	. 1 8 0	. 1 6 8	. 8 7 0	1 .0 0 0	. 3 4 2	. 3 0 0	. 3 3 0	- .0 6 7			

	T Q 7	.	.	.	.	.	.	.	.	-	-	-	-	.	.	.	.	.	.	.	1	.	.
		2	2	2	1	1	2	2	1	2	.	.	.	0	2	1	2	3	1	3	3	4	3
		3	5	0	8	8	0	6	3	2	0	0	0	0	5	4	6	4	4	0	4	0	0
		1	0	1	8	8	9	5	3	8	3	9	4	6	2	6	5	2	1	9	2	0	1
											9	1	6	3							0		
	T Q 8	.	.	.	.	.	.	.	.	.	-	.	.	.	.	.	.	.	.	.	.	1	.
		1	1	1	1	1	2	1	0	1	.	0	0	0	.	1	2	1	3	0	3	4	.
		4	5	4	0	6	1	8	7	2	0	0	2	4	0	6	0	3	3	8	0	3	0
		1	6	4	6	4	9	5	1	1	2	6	8	8	0	4	0	7	8	4	6	0	2
											5				4							0	
	C C 1	.	.	.	.	.	.	.	.	.	-	-	-	.	.	.	.	.	.	-	-	.	1
		2	2	2	1	1	1	1	2	2	.	.	.	0	1	3	2	2	0	.	.	3	.
		4	2	1	4	7	6	7	6	7	1	1	0	6	6	1	0	6	1	0	0	5	0
		1	0	6	5	3	1	1	9	7	1	0	5	6	3	5	8	1	5	1	4	6	0
											3	4	3	6						4	7		
	C C 2	-	-	.	.	.	.	-	-	-	.	.	.	.	.	-	.	.	-	.	.	.	-
		.	.	0	0	0	0	.	.	.	0	0	0	0	0	0	0	0	0	4	3	1	.
		0	1	1	7	1	4	0	1	1	3	0	2	3	0	0	0	0	4	2	9	0	0
		5	1	6	5	8	7	2	5	0	3	7	5	0	2	4	2	3	2	2	8	0	3
		3	6					2	1	4					8		4		2				0
	C C 3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-	-
		0	0	1	1	2	1	1	0	1	5	4	4	4	2	1	1	0	0	2	2	2	.
		9	8	8	6	0	5	5	5	0	0	8	8	9	9	5	8	8	4	2	6	6	0
		4	1	2	7	9	4	5	8	9	9	5	8	0	7	5	7	6	8	0	1	9	1
																						0	5
	C C 4	.	.	.	.	.	.	.	.	.	-	-	-	.	.	.	.	.	.	.	.	.	.
		0	0	1	2	0	1	0	1	0	.	.	.	1	0	1	2	1	0	2	2	2	3
		7	2	1	0	7	3	7	4	1	0	1	1	0	7	7	5	2	5	5	5	9	9
		4	7	6	3	8	2	1	3	9	7	5	2	4	0	5	8	0	9	9	7	9	3
											2	3	6	8									
	M T1	.	.	.	.	.	.	.	.	.	-	-	-	.	.	.	.	.	.	-	.	.	.
		2	2	1	2	1	2	0	2	2	.	.	.	0	1	1	2	1	0	.	0	3	1
		4	1	0	8	2	2	6	1	8	1	1	1	1	2	1	5	7	8	0	4	2	4
		0	3	7	1	6	1	4	0	5	0	3	1	6					5	4	3	4	9
																			8				

	M T2	.	.	.	.	.	.	.	.	-	-	-	-	.	.	.	.	.	-	-	.	.	.		
		2	2	1	2	2	2	1	2	2	.	.	.	.	0	1	1	1	1	0	.	3	1	2	
		3	5	3	7	2	5	5	3	5	2	2	1	1	6	5	3	6	7	4	1	0	0	8	5
	M T3	7	9	7	3	5	9	2	4	5	3	1	5	7	3	1	8	5	0	9	1	9	2	1	8
											2	9	3	1						2	6				
	M T4	.	.	.	.	.	.	.	.	.	-	-	-	-	.	.	.	.	.	-	-	.	.	.	
		2	3	1	2	2	2	2	4	3	.	.	.	.	0	2	2	2	2	0	.	.	2	2	3
		1	1	8	2	5	0	0	0	0	1	1	1	0	8	7	2	5	9	0	0	0	9	9	2
	M T5	3	4	8	5	7	4	3	3	0	6	4	2	9	7	5	6	5	7	2	8	3	8	4	3
											3	7	6	1						9	3				
	S R1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-	-	-	
		2	3	3	3	3	3	2	3	3	6	6	6	5	4	2	3	1	1	2	1	2	.	.	.
		7	2	3	3	6	0	9	0	5	2	8	9	8	4	6	3	3	4	9	5	1	1	0	0
	S R2	9	0	0	6	5	4	1	6	8	2	0	9	6	1	1	0	0	2	1	2	6	3	3	1
	S R3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-	.	-	
		2	3	3	3	3	3	3	3	3	6	6	6	5	4	3	3	1	1	3	2	2	.	0	.
		9	4	5	3	6	4	1	2	5	1	6	8	8	1	3	1	2	1	1	1	7	0	2	1
	S R3	4	6	2	5	6	4	6	1	0	4	9	7	1	3	2	1	3	5	8	2	1	5	1	0
																						0		0	

	S R 4	. 2 9 9	. 3 5 6	. 3 4 4	. 3 6 3	. 3 9 6	. 3 1 8	. 2 8 1	. 3 1 3	. 3 5 5	. 6 4 8	. 6 9 0	. 7 0 3	. 6 1 8	. 4 0 7	. 3 0 9	. 3 1 0	. 1 5 0	. 1 1 4	. 3 1 3	. 1 7 8	. 2 5 0	- .0 7	- .0 5	- .1 0	
	S R 5	. 2 7 9	. 3 5 3	. 3 2 9	. 3 3 2	. 4 2 1	. 3 7 1	. 3 1 8	. 2 5 8	. 3 2 0	. 5 0 2	. 5 4 6	. 5 6 5	. 4 9 6	. 4 1 4	. 2 8 5	. 2 1 7	. 0 6 9	. 0 5 6	. 2 6 5	. 0 5 7	. 1 5 5	- .0 2	- .0 1	- .0 6	
	C O L1	. 1 8 0	. 2 1 3	. 2 2 9	. 3 6 2	. 3 0 7	. 2 9 5	. 2 5 2	. 2 6 4	. 2 4 9	. 1 2 9	. 1 2 8	. 1 4 1	. 1 5 3	. 0 6 9	. 0 8 1	. 2 8 8	. 1 9 0	. 1 7 6	. 1 8 6	. 1 1 4	. 1 3 0	. 1 3 1	. 0 6 7	. 0 6 0	
	C O L2	. 2 1 6	. 2 3 6	. 2 5 5	. 3 0 2	. 2 7 5	. 3 0 2	. 1 7 0	. 3 1 0	. 3 4 1	- .0 1 4	. 0 1 1	. 0 2 5	. 0 4 0	. 0 2 6	. 1 9 5	. 3 1 0	. 2 4 3	. 2 3 2	. 1 4 0	- .0 0 1	. 0 5 2	. 0 9 8	. 1 1 0	. 1 5 6	
	IN T E R 1	. 1 8 4	. 1 8 4	. 2 1 5	. 2 9 6	. 2 0 6	. 1 7 6	. 1 8 5	. 1 5 0	. 3 5 7	. 2 1 4	. 2 0 7	. 2 3 0	. 2 2 2	. 2 1 7	. 2 6 2	. 2 3 5	. 2 0 5	. 1 8 6	. 1 7 9	. 0 2 7	. 0 6 4	. 1 3 0	. 0 7 5	. 0 8 5	
	IN T E R 2	. 2 5 8	. 1 9 5	. 2 7 7	. 3 5 7	. 3 7 3	. 2 5 1	. 2 9 8	. 2 5 9	. 2 2 2	. 5 8 5	. 6 2 4	. 6 2 1	. 6 0 2	. 3 9	. 1 8 8	. 3 2 8	. 1 5 4	. 0 8 2	. 2 8 5	. 2 1 8	. 2 5 8	. 2 1 9	- .1 7	- .3 1	- .9 9
	IN T E R 3	. 2 8 5	. 2 9 1	. 3 3 9	. 4 0 8	. 3 9 4	. 3 3 6	. 3 1 9	. 3 5 2	. 3 4 9	. 5 8 8	. 6 1 2	. 6 1 8	. 5 6 2	. 4 0 5	. 3 0 6	. 3 4 8	. 2 2 0	. 0 7 6	. 3 0 3	. 2 1 7	. 2 8 1	- .6 9	- .5 4	- .0 5	
	Q A1	. 2 1 6	. 3 3 7	. 2 9 3	. 2 9 8	. 3 0 7	. 3 2 1	. 2 4 5	. 3 7 0	. 2 9 2	. 1 2 7	. 1 0 9	. 1 0 3	. 1 9 4	. 0 4 1	. 3 1 0	. 2 5 5	. 1 8 5	. 2 1 9	. 1 6 4	. 2 0 2	. 2 0 2	. 1 9 3	. 2 5 7	. 2 3 7	. 2 3 9

Sig. (1-tailed)	Q A2	.273	.317	.221	.226	.234	.230	.327	.347	-.002	.003	.005	.003	.158	.298	.179	.247	.144	.102	.077	.005	.119	.183	.113	.234
		.273	.317	.221	.226	.234	.230	.327	.347	.003	.005	.003	.008	.158	.298	.179	.247	.144	.102	.077	.005	.119	.183	.113	.234
		.273	.317	.221	.226	.234	.230	.327	.347	.003	.005	.003	.008	.158	.298	.179	.247	.144	.102	.077	.005	.119	.183	.113	.234
	Q 13	.282	.288	.274	.277	.211	.244	.216	.345	.309	.005	.008	.009	.100	.208	.222	.199	.300	.090	.109	.080	.204	.220	.222	.325
		.282	.288	.274	.277	.211	.244	.216	.345	.309	.005	.008	.009	.100	.208	.222	.199	.300	.090	.109	.080	.204	.220	.222	.325
		.282	.288	.274	.277	.211	.244	.216	.345	.309	.005	.008	.009	.100	.208	.222	.199	.300	.090	.109	.080	.204	.220	.222	.325
	UI 1	.192	.215	.173	.173	.132	.163	.188	.241	-.006	-.007	-.006	-.005	.027	.122	.115	.199	.180	.091	.044	.036	.273	.214	.189	.166
		.192	.215	.173	.173	.132	.163	.188	.241	.006	.007	.006	.005	.027	.122	.115	.199	.180	.091	.044	.036	.273	.214	.189	.166
		.192	.215	.173	.173	.132	.163	.188	.241	.006	.007	.006	.005	.027	.122	.115	.199	.180	.091	.044	.036	.273	.214	.189	.166
	UI 2	.197	.287	.165	.182	.208	.190	.242	.306	-.009	-.005	-.002	-.005	.053	.234	.182	.219	.207	.102	.137	.122	.280	.231	.239	.163
		.197	.287	.165	.182	.208	.190	.242	.306	.009	.005	.002	.005	.053	.234	.182	.219	.207	.102	.137	.122	.280	.231	.239	.163
		.197	.287	.165	.182	.208	.190	.242	.306	.009	.005	.002	.005	.053	.234	.182	.219	.207	.102	.137	.122	.280	.231	.239	.163
UI 3	.310	.381	.264	.315	.297	.258	.328	.412	.004	.008	.011	.003	.107	.205	.227	.229	.280	.109	.105	.205	.229	.240	.270	.244	
	.310	.381	.264	.315	.297	.258	.328	.412	.004	.008	.011	.003	.107	.205	.227	.229	.280	.109	.105	.205	.229	.240	.270	.244	
	.310	.381	.264	.315	.297	.258	.328	.412	.004	.008	.011	.003	.107	.205	.227	.229	.280	.109	.105	.205	.229	.240	.270	.244	
IN F1	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.023	.149	.000	.001	.000		
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.038	.188	.000	.000	.000		
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.040	.191	.000	.001	.000		
IN F2	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.038	.188	.000	.000	.000		
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.040	.191	.000	.000	.000		
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.040	.191	.000	.000	.000		
IN F3	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006	.191	.000	.001	.000		
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006	.191	.000	.001	.000			
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006	.191	.000	.001	.000			

	S S S1	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1
		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	7	1
	S S S2	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	1	0	6	1	1	5	3
	S S S3	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
		0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	8	1	0	3	0	0	5
	S S S4	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	6	0	0	5	2	0	3
	F Q 1	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	3	3	0	1	0
		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	9	5	1	3	0
		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	9	5	4	8	2	0
	F Q 2	.	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	7	7	0	2	0
		0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	4	6	0	8	0
	U A1	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0		0	0	0	0	0	0	3	4	0	0	0	2	3	0
		0	0	0	0	0	0	0	0		0	0	0	0	0	0	4	1	0	0	0	6	4	3
		0	0	0	0	0	0	0	0		0	0	0	0	3	0	1	9	2	0	0	9	8	7
	U A2	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0		0	0	0	0	0	4	4	0	0	0	0	4	0
		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	6	0	0	0	7	6	5
		0	0	0	0	0	0	0	0	0		0	0	0	0	0	7	0	0	0	0	6	1	0
	U A3	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0		0	0	0	0	3	2	0	0	0	2	3	2
		0	0	0	0	0	0	0	0	0	0		0	0	0	0	5	6	0	0	0	3	2	0
		0	0	0	0	0	0	0	0	0	0		0	0	0	0	8	8	0	0	0	6	8	0

	U A4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	0
	S S5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	3	3	4
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	7
	F Q3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0
	T Q1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	T Q2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	3	4	3	3	1	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	1	0	0	0	4	0	5	1	0	0	0	0	0	0	0	0	1
	T Q3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	4	4	2	3	3	0	0	0	0	0	0	0	0	0
		8	0	1	2	1	1	0	0	9	0	8	4	3	0	0	0	0	0	8	3	0	0
	T Q4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
		3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	9
	T Q5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		2	3	0	0	0	0	3	4	0	0	0	0	3	0	0	0	0	0	0	0	0	2
		3	8	6	0	0	1	0	9	7	0	0	0	0	7	0	0	0	0	0	0	0	4
	T Q6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		1	1	0	0	0	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1
		4	8	1	0	0	0	5	7	0	0	0	0	5	1	0	0	3	0	0	0	0	4
		9	0	9	0	1	0	2	4	6	0	0	0	3	8	1	0	3	4	0	0	0	4

	T Q 7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	2	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	1	0	6	7	3	4	6	0	1	0	0	1	0	0	0	0	0	0
	T Q 8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	1	0	3	4	3	2	4	0	0	0	0	0	0	0	0	0	0	0
		1	0	1	4	0	0	3	2	4	6	2	2	7	0	0	1	0	9	0	0	0	0	0	0
	C C 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	4	2	1	0	0	0	0
		0	0	0	1	0	0	0	0	3	5	0	5	6	0	0	0	0	3	4	4	4	0	0	0
	C C 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		2	0	4	1	3	2	3	0	3	4	3	3	3	4	3	4	3	2	0	0	0	0	0	3
		0	3	0	1	9	3	6	0	5	0	5	4	1	2	7	5	7	6	5	0	0	5	0	1
	C C 3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0
		6	0	0	0	0	0	8	4	0	0	0	0	0	0	0	8	2	0	0	0	3	6	2	4
	C C 4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		1	3	0	0	1	0	1	0	3	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0
		2	3	3	0	0	1	3	1	8	2	0	2	0	5	1	0	0	2	7	0	0	0	0	0
	M T1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	1	0	0	0	0	0	0	4	0	0	0	0	0	2	2	0	0	0	0
		0	0	4	0	2	0	5	0	0	0	0	1	4	2	2	3	0	0	8	2	4	0	0	0
	M T2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0
		0	0	1	0	0	0	0	0	0	0	0	0	6	0	1	0	0	1	3	6	0	0	0	0
	M T3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	3	1	0	0	0	0	0	0	4	0	3	0	0	2	1	1	0	0	0	0
		0	3	2	4	7	4	9	3	2	0	0	0	0	1	0	0	0	0	1	5	0	0	0	0
		6	4	1	8	5	8	3	5	2	0	0	0	9	7	5	0	6	6	9	4	0	4	0	0

	M T4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	0	0
		0	0	0	0	0	0	0	0	0	1	2	7	8	0	0	0	0	8	8	0	0	0	0
	M T5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	1	2	3	3	0	0	0	0	0	3	0	4	0	0	0
		0	0	0	0	0	0	0	0	4	0	3	7	8	0	0	0	2	3	2	9	0	3	0
	S R 1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	2	5	6
	S R 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	1	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7	0	0	0	2	3	4
	S R 3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	1	7	5
	S R 4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	9	5
	S R 5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	3	4	4
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	0	8	3	6	0	6
	C O L1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	
		0	0	0	0	0	0	0	0	2	2	1	0	3	0	0	0	0	3	2	1	4	7	
	C O L2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	0	0	0	4	4	3	2	3	0	0	0	0	4	2	0	0	0	
		0	0	0	0	0	0	0	0	1	2	4	6	4	0	0	0	1	9	0	6	4	0	
		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		0	0	0	0	0	3	0	0	3	8	4	6	0	1	0	0	0	3	6	7	0	1	7
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	INTER 1	.002	.002	.000	.000	.001	.003	.002	.009	.000	.000	.000	.000	.000	.000	.000	.000	.001	.002	.002	.038	.0156	.000	.0120	.0089	
		INTER 2	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.009	.007	.007	.000	.000	.003	.012	.0058
			INTER 3	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.004	.000	.000	.000	.013	.0198
	QA1	.000		.000	.000	.000	.000	.000	.000	.000	.002	.004	.003	.006	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		QA2	.000	.000	.000	.000	.000	.000	.000	.000	.004	.009	.008	.002	.003	.000	.000	.000	.000	.001	.002	.001	.000	.000	.000	.000
			Q13	.000	.000	.000	.000	.000	.000	.000	.000	.001	.007	.008	.006	.009	.004	.000	.000	.000	.000	.007	.000	.000	.000	.000
	UI 1	.001		.000	.000	.000	.001	.002	.000	.000	.000	.008	.014	.013	.020	.034	.002	.006	.001	.002	.005	.026	.048	.000	.009	.000
		UI 2	.001	.000	.000	.000	.001	.001	.001	.000	.000	.003	.018	.032	.017	.020	.000	.002	.000	.000	.004	.005	.013	.000	.000	.001

UI 3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	9	9	3	6	4	0	0	0	0	2	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	8	6	8	0	5	0	0	0	0	0	5	1	0	0	0

Inverse of Correlation Matrix

	INF1	INF2	INF3	SSS 1	SSS 2	SSS 3	SSS 4	FQ1	FQ2	UA1	UA2	UA3
INF1	3.77 6	- 1.84 1	- .753	- .425	- .354	- .184	.441 .472	- .472	.095	.623	-.989	.584
INF2	- 1.84 1	4.52 6	- 1.01 9	.198 .781	- .781	.811 .007	- .007	- .717	- .373	- .047	.834	- .851
INF3	- .753	- 1.01 9	3.37 6	- .732	.273 .526	- .526	- .522	.302 .134	- .134	- .466	-.151	- .638
SSS1	- .425	.198	- .732	3.97 8	- 1.77 8	- .343	- .321	.272 .495	- .495	- .448	.276	.193
SSS2	- .354	- .781	.273	- 1.77 8	4.69 4	- 1.51 6	- .587	- .005	.209	.905	- 1.532	.391
SSS3	- .184	.811	- .526	- .343	- 1.51 6	3.18 2	- .377	- .426	- .280	- .354	.720	- .117
SSS4	.441 .007	- .007	- .522	- .321	- .587	- .377	2.33 4	- .257	.115	.366	.248	- .307
FQ1	- .472	- .717	.302	.272 .005	- .005	- .426	- .257	2.93 9	- .755	- .187	.029	.237
FQ2	.095 .373	- .373	- .134	- .495	.209	- .280	.115	- .755	2.89 2	- .458	.859	- .782

UA1	.623	- .047	- .466	- .448	.905	- .354	.366	- .187	- .458	7.65 5	- 5.431	- .741
UA2	- .989	.834	- .151	.276	- 1.53 2	.720	.248	.029	.859	- 5.43 1	14.89 9	- 6.16 8
UA3	.584	- .851	- .638	.193	.391	- .117	- .307	.237	- .782	- .741	- 6.168	9.78 7
UA4	- .612	- .659	.520	.334	- .083	- .175	- .249	.246	- .264	- .859	- 2.329	- .866
SSS5	.092	.080	- .027	.049	.348	- .091	- .407	- .589	- .009	.508	-.648	.239
FQ3	.017	- .141	- .094	- .359	- .103	.114	- .093	.028	- .146	.163	.243	- .181
TQ1	.026	- .036	- .167	- .188	.257	- .158	.062	- .006	.066	- .010	-.842	.577
TQ2	- .224	.439	- .239	- .047	- .369	.495	.051	- .213	- .223	- .131	.653	.115
TQ3	.372	- .430	.116	.407	.002	- .263	- .143	- .020	- .406	- .024	-.019	.102
TQ4	- .012	.007	- .052	- .140	.053	.010	.106	.359	.037	.238	.272	- .158
TQ5	- .476	.611	.173	- .162	- .746	.877	- .153	- .094	.430	- 1.20 4	1.952	- .988
TQ6	.631	- .512	.152	- .110	.789	- 1.07 9	.087	.254	- .201	1.13 0	- 1.814	.030
TQ7	- .303	- .050	- .046	.273	- .080	.109	- .358	.139	- .098	- .675	.364	.311
TQ8	- .138	.065	.053	.131	.065	- .196	- .045	.173	- .011	.569	-.326	- .088
CC1	- .174	.180	- .163	.277	- .126	.026	- .017	- .029	- .186	.278	.335	- .510

CC2	- .006	.215	- .193	- .143	.033	- .013	.073	.227	- .121	.221	-.047	.121
CC3	.172	.081	.049	.366	- .384	.081	.012	.062	.028	- .622	.372	- .290
CC4	.063	- .052	.002	- .439	- .024	- .017	.208	- .345	.467	- .646	.639	- .012
MT1	- .333	- .219	.406	- .537	.648	- .378	.308	.064	- .052	- .064	.233	- .074
MT2	.006	- .289	.423	- .421	- .054	- .325	.172	.060	.054	.287	.204	- .407
MT3	- .340	.179	- .441	.187	.322	.145	- .165	.301	- .021	.207	.243	- .023
MT4	.358	- .316	- .101	- .011	- .328	.280	.089	- .440	.308	.042	-.021	.454
MT5	.108	.415	.147	.210	- .438	.330	- .250	- .339	- .442	- .188	.078	- .324
SR1	- .020	.421	.138	- .357	- .460	.289	.044	.334	- .128	- .469	.210	- 1.07 5
SR2	.342	- .941	.462	.355	.539	- .165	- .154	- .950	- .102	.500	-.649	- .108
SR3	- .001	- .001	- .508	.492	.529	- .829	- .214	.086	.081	.423	-.820	.460
SR4	- .305	.208	.293	- .766	- .218	.640	.565	.295	.259	- .525	.596	- .413
SR5	.234	- .257	- .002	.396	- .496	- .291	- .100	.407	- .002	- .195	.027	- .179
COL1	.162	.003	- .119	- .265	.024	.008	- .175	- .188	.230	.051	.160	.033
COL2	- .010	.084	- .084	.011	.140	- .314	.169	- .083	- .266	.418	-.227	.126
INTER 1	.013	.103	- .013	- .194	.112	.139	.004	.445	- .488	- .014	-.016	.086

INTER 2	- .507	.996 .004	- .004	.003 .362	- .362	.582 .313	- .375	- .009	.056 .056	.137 .137	- .243
INTER 3	.209 .221	- .221	.197 .457	- .457	.317 .292	- .292	.068 .328	- .056	.056 .019	- .268	.083 .083
QA1	.564 .451	- .451	- .176	.144 .173	- .173	- .181	.013 .060	- .283	- .719	-.088 .589	.589 .589
QA2	- .069	.025 .229	- .229	.672 .318	- .318	- .045	.053 .064	- .170	- .236	1.030 .623	- .623
Q13	- .420	.627 .046	- .046	- .491	.493 .306	.306 .098	- .307	- .137	.642 .642	-.953 .380	.380 .380
UI1	- .019	- .007	.036 .267	- .267	.327 .090	.090 .297	- .094	- .135	.186 .186	-.443 .473	.473 .473
UI2	.088 .399	- .399	.238 .025	- .025	.035 .160	- .160	.143 .023	.023 .177	- .151	-.007 .155	- .155
UI3	.015 .281	- .281	.157 .262	.262 .448	- .448	.097 .003	.003 .069	- .329	.095 .095	-.256 .040	- .040

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.886
Bartlett's Test of Sphericity	Approx. Chi-Square	8787.729
	df	1128
	Sig.	.000

Anti-image Matrices

		IN	IN	I	S	S	S	S	F	F	U	U	U	U	S	F	T	T	T	T	T	T	T	T	T	T
		F1	F2	F3	S1	S2	S3	S4	Q1	Q2	A1	A2	A3	A4	S5	Q3	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q8	
Anti - ima ge Cov aria nce	IN F1	.2 65	- .1 08	- .0 05 9	- .0 02 8	- .0 02 0	- .0 01 5	.0 50 3	- .0 04 3	. 00 9	. 00 2	- .0 01 8	. 00 1	- .0 06 3 0	.0 11 1	. 00 2	. 00 4	- .0 03 3	. 00 4	- .0 00 2	- .0 00 1	.0 26	- .0 03 8	- .0 02 0	- .0 02 0	
	IN F2	- .1 08	.2 21	- .0 06 7	.0 13 7	- .0 06 1	.0 56 1	- .0 05 4	- .0 02 8	- .0 00 1	- .0 00 0	. 00 1	- .0 02 9	. 00 1	.0 08	- .0 01 6	- .0 00 4	. 00 5	- .0 00 4	. 00 0	. 00 2	- .0 01 8	- .0 00 5	. 00 0	. 00 8	
	IN F3	- .0 59	- .0 67	. 02 9 6	- .0 05 5	.0 17 9	- .0 06 6	. 00 3	. 00 0	. 00 1	. 00 1	- .0 00 3	. 00 0	. 00 1	.0 04	- .0 01 4	- .0 00 5	- .0 00 9	. 00 1	- .0 00 9	. 00 0	.0 07	- .0 00 7	. 00 0	. 00 9	
	S S S1	- .0 28	.0 11	- .0 05 5	.2 51 5	- .0 02 7	- .0 03 5	. 00 2	. 00 4	- .0 01 3	. 00 1	. 00 5	. 00 5	.0 06	.0 00	- .0 04 6	- .0 02 4	- .0 00 6	. 00 7	- .0 02 0	- .0 00 7	- .0 00 4	. 00 3	. 00 8		
	S S S2	- .0 20	- .0 37	. 00 7	- .0 09 5	.2 13 2	- .0 05 4	. 00 0	. 00 1	. 00 5	. 00 2	- .0 00 2	. 00 9	. 00 0	.0 04	- .0 01 1	. 00 8	- .0 00 3	. 00 0	- .0 00 6	. 00 2	.0 26	- .0 00 8	. 00 0	. 00 8	
	S S S3	- .0 15	.0 56	- .0 04 9	- .0 02 7	- .0 00 2	.3 14 1	- .0 05 6	. 00 4	. 00 3	. 00 1	. 00 5	. 00 4	. 00 0	.0 01	- .0 01 8	- .0 00 5	. 00 6	- .0 00 3	. 00 2	. 00 4	- .0 00 5	. 00 6	. 00 3	. 00 4	
	S S S4	.0 50	- .0 01	- .0 06 6	- .0 03 5	- .0 05 4	- .0 05 1	.4 23 8	- .0 03 8	. 00 7	. 00 0	. 00 7	. 00 1	. 00 2	.0 07	- .0 02 0	. 00 4	. 00 2	- .0 00 8	. 00 5	- .0 01 1	.0 06	- .0 07 3	- .0 01 1	- .0 01 1	

F Q 1	- .0 43	- .0 54	. 0 3	.0 2 3	.0 0 0	- .0 4	- .0 3	. 3 4	- .0 0	- .0 0	. 0 0	. 0 0	. 0 1	- .0 9	. 0 0	- .0 0	- .0 0	- .0 0	. 0 6	- .0 0	.0 14	. 0 2	. 0 3
F Q 2	.0 09	- .0 28	- .0 0	- .0 4	.0 1 5	- .0 3	.0 1 7	. 3 0	- .0 4	. 3 0	. 0 2	. 0 0	. 0 1	- .0 0	- .0 0	. 0 1	- .0 0	- .0 0	. 0 0	. 0 0	- .0 11	. 0 1	. 0 0
U A1	.0 22	- .0 01	- .0 0	- .0 1	.0 2 5	- .0 1	.0 2 0	. 3 0	- .0 0	. 3 0	. 0 0	. 0 0	. 0 1	.0 3 0	. 0 1	- .0 0	- .0 0	- .0 0	. 0 0	. 0 1	.0 23	- .0 0	. 0 4
U A2	- .0 18	.0 12	- .0 0	.0 0 5	- .0 2	.0 1 5	.0 0 7	. 0 0	. 0 2	- .0 0	. 0 6	. 0 0	. 0 2	- .0 0	. 0 0	- .0 0	. 0 2	- .0 0	. 0 0	. 0 1	- .0 19	. 0 2	- .0 1
U A3	.0 16	- .0 19	- .0 0	.0 0 5	.0 0 9	- .0 0	- .0 1	. 0 0	- .0 0	- .0 0	. 0 0	. 0 0	. 0 1	.0 1 0	- .0 0	. 0 3	. 0 0	. 0 0	- .0 0	. 0 0	.0 00	. 0 1	- .0 0
U A4	- .0 30	- .0 27	. 0 2	.0 1 6	- .0 0	- .0 1	- .0 2	. 0 1	- .0 0	- .0 0	. 0 0	. 0 0	. 0 1	.0 1 0	- .0 0	- .0 0	- .0 0	. 0 3	- .0 0	. 0 0	.0 15	. 0 7	- .0 1
S S S5	.0 11	.0 08	- .0 0	.0 0 6	.0 3 4	- .0 1	- .0 7	. 0 0	- .0 0	- .0 0	. 0 3	. 0 0	. 0 1	.4 5 5	- .0 0	. 0 0	. 0 2	. 0 8	- .0 1	. 0 0	.0 39	. 0 1	. 0 1

F Q 3	.0 02	- .0 16	- .0 01 4	- .0 46	- .0 11	.0 18	- .0 20	. 00 5	- .0 02 6	. 00 11	. 00 18	- .0 00 9	- .0 00 7	- .0 83	. 51 0	- .0 00 7	. 04 2	- .0 06 5	- .0 10 4	. 02 4	- .0 20	- .0 04 5	. 02 6
T Q 1	.0 04	- .0 04	- .0 02 5	- .0 24	.0 28	- .0 25	.0 14	- .0 00 1	. 01 2	- .0 00 1	- .0 02 9	- .0 03 0	- .0 01 5	.0 03	- .0 00 7	. 50 0	- .0 13 0	- .0 11 8	. 01 7	. 00 1	- .0 07	. 04 0	- .0 01 4
T Q 2	- .0 33	.0 53	- .0 03 9	- .0 06	- .0 43	.0 86	.0 12	- .0 04 0	- .0 04 2	- .0 00 9	. 02 4	. 00 6	- .0 01 1	.0 22	. 04 2	- .0 13 0	. 51 7	- .0 00 4	- .0 05 1	. 01 4	- .0 48	- .0 09	. 02 5
T Q 3	.0 45	- .0 44	. 00 6	.0 47	.0 00	- .0 38	- .0 28	- .0 00 3	- .0 06 5	- .0 00 1	- .0 00 1	. 00 5	. 00 2	.0 83	- .0 06 5	- .0 11 8	- .0 07 1	. 46 1	- .0 13 2	- .0 05 6	.0 59	- .0 62	- .0 00
T Q 4	- .0 02	.0 01	- .0 00 9	- .0 20	.0 62	.0 25	.0 26	. 00 9	. 00 7	. 01 7	. 01 0	- .0 00 9	- .0 03 0	- .0 77	. 11 0	- .0 17 9	- .0 05 4	- .0 13 2	. 56 1	. 00 2	- .0 05	- .0 23	. 01 7
T Q 5	- .0 21	.0 23	. 00 9	- .0 07	- .0 27	.0 41	- .0 11	- .0 00 5	. 02 5	- .0 05 7	. 02 2	- .0 01 7	- .0 01 3	- .0 32	. 00 4	. 00 1	. 00 1	- .0 56	. 00 2	. 01 0	- .0 30	. 04	. 00 4
T Q 6	.0 26	- .0 18	. 00 7	- .0 04	.0 26	- .0 53	.0 06	. 00 1	- .0 04 1	. 02 3	- .0 01 9	. 00 0	. 00 5	.0 39	- .0 02 0	- .0 00 7	- .0 04 8	. 05 9	- .0 00 5	- .0 01 0	.1 56	- .0 60	- .0 02

T Q 7	- .0 38	- .0 05	- .0 03	.0 30	- .0 10	.0 16	- .0 73	. 02	- .0 00	- .0 00	. 01	. 01	. 00	.0 14	- .0 40	. .0 40	- .0 00	- .0 06	- .0 22	. 00	- .0 60	. 47	- .0 68
T Q 8	- .0 20	.0 08	. 00	.0 18	.0 08	- .0 34	- .0 11	. 03	- .0 00	. 04	- .0 01	- .0 00	- .0 04	.0 15	. 02	- .0 01	. 02	- .0 15	. 01	. 01	- .0 42	- .0 08	. .54
C C1	- .0 27	.0 23	- .0 02	.0 41	- .0 15	.0 04	- .0 06	- .0 00	- .0 03	. 02	. 01	- .0 03	. 03	.0 09	- .0 00	- .0 01	. 00	. 00	. 02	- .0 02	.0 55	- .0 08	- .0 31
C C2	- .0 01	.0 28	- .0 03	- .0 21	.0 04	- .0 02	.0 15	. 04	- .0 02	. 07	- .0 02	. 00	- .0 01	.0 13	- .0 02	. 08	. 00	. 06	. 01	. 03	- .0 21	. 04	- .0 18
C C3	.0 21	.0 08	. 00	.0 42	- .0 13	.0 22	. 01	. 00	- .0 04	. 03	- .0 11	- .0 01	- .0 03	- .0 06	- .0 02	- .0 07	- .0 00	- .0 03	. 00	. 02	- .0 81	- .0 25	- .0 01
C C4	.0 08	- .0 06	. 00	- .0 05	- .0 03	.0 45	- .0 59	. 08	- .0 24	. 02	- .0 02	. 04	. 04	.0 11	- .0 05	- .0 04	- .0 03	. 00	- .0 02	- .0 09	- .0 14	- .0 26	- .0 66
M T1	- .0 40	- .0 22	. 05	- .0 62	.0 63	- .0 54	.0 60	. 01	- .0 00	- .0 00	. 07	- .0 03	- .0 09	.0 08	. 01	. 04	- .0 06	- .0 08	- .0 03	. 05	- .0 21	- .0 05	. .03

M T2	.0 01	- 25	. 05 0	- .0 42 5	- .0 05 2	- .0 04 5	.0 29 0	. 00 8	. 00 7	. 01 5	. 00 5	- .0 01 6	. 02 1	- .0 04 3	- .0 04 4	. 00 0	. 00 9	- .0 02 1	- .0 01 7	.0 35	- 04 8	- .0 01 8
M T3	- .0 42	.0 18	- .0 06 0	.0 22 2	.0 32 1	- .0 33 3	. 04 7	- .0 03	. 01 0	. 00 8	- .0 01 3	- .0 02 1	- .0 03 1	. 00 6	- .0 06 8	. 00 6	. 00 2	. 07 4	- .0 05	.0 11	- 01 7	. 00 4
M T4	.0 36	- .0 27	- .0 11 1	- .0 01 1	- .0 02 7	.0 34 5	.0 15 8	- .0 04 5	. 00 1	. 00 2	- .0 08 1	- .0 06	- .0 03 7	. 00 5	- .0 03 2	. 00 1	. 00 4	. 07 1	. 00 6	.0 05	- 02 1	- .0 08 9
M T5	.0 11	.0 34	. 01 6	.0 20 5	- .0 03 5	.0 39 0	- .0 04 3	- .0 05 7	- .0 00 9	. 00 2	- .0 01 2	- .0 01 0	- .0 08 3	. 00 6	- .0 03 6	. 00 2	. 00 9	- .0 01 4	. 00 5	- .0 05 1	. 00 1	. 00 0
S R1	- .0 01	.0 13	. 00 5	- .0 01 2	- .0 01 3	.0 12 3	.0 03 5	. 00 6	- .0 00 8	- .0 00 2	. 00 5	- .0 01 0	- .0 05 7	. 00 8	- .0 01 4	. 00 1	. 00 4	. 02 1	. 02 4	- .0 01 5	. 00 3	. 00 5
S R2	.0 11	- .0 25	. 00 6	.0 11 4	.0 14 6	- .0 00 6	- .0 00 8	- .0 03 9	. 00 4	. 00 8	- .0 00 5	- .0 00 1	.0 04 7	- .0 00 1	- .0 00 4	. 00 0	. 00 2	- .0 03 4	- .0 02 6	.0 07	- 01 8	. 00 6
S R3	- 2. 01 2E -5	- 1. 88 1E -5	- .0 01 3	.0 11 0	.0 10 2	- .0 02 8	- .0 03 3	. 00 0	. 00 2	. 00 5	- .0 00 5	. 00 4	. 00 9	.0 02 5	- .0 00 4	- .0 00 6	. 00 1	. 00 8	- .0 01 7	.0 12	- 00 1	- .0 03 9

S R4	- .0 08	.0 04	. 0 8	- .0 1	- .0 0	.0 2	.0 2	. 0	. 0	- .0 0	. 0	- .0 0	- .0 0	- .0 0	. 0	. 0	- .0 0	- .0 0	. 0	. 0	- .0 17	- .0 0	. 0	. 0
S R5	.0 24	- .0 22	. 0 0	.0 3	- .0 4	- .0 3	- .0 1	. 0	. 0	- .0 0	. 0	- .0 0	- .0 0	- .0 0	. 0	. 0	. 0	. 0	. 0	. 0	.0 12	- .0 0	- .0 0	. 0
C O L1	.0 23	.0 00	- .0 1	- .0 3	.0 0	.0 0	- .0 4	- .0 0	. 0	. 0	. 0	. 0	- .0 0	.0 4	. 0	- .0 0	. 0	. 0	- .0 0	- .0 0	.0 20	- .0 0	. 0	. 0
C O L2	- .0 01	.0 09	- .0 1	.0 0	.0 1	- .0 4	.0 3	- .0 0	- .0 0	. 0	- .0 0	. 0	- .0 0	.0 6	- .0 0	- .0 0	. 0	. 0	- .0 0	. 0	.0 01	. 0	. 0	. 0
IN TE R1	.0 02	.0 14	- .0 0	- .0 3	.0 1	.0 2	.0 0	. 0	- .0 0	- .0 0	. 0	- .0 0	- .0 0	.0 4	. 0	- .0 0	. 0	- .0 0	. 0	. 0	.0 06	- .0 0	- .0 0	. 0
IN TE R2	- .0 34	.0 56	. 0 0	.0 0	- .0 2	.0 4	- .0 3	- .0 0	. 0	. 0	. 0	- .0 0	- .0 0	.0 4	. 0	- .0 0	. 0	- .0 0	- .0 0	- .0 0	- .0 07	. 0	. 0	. 0
IN TE R3	.0 13	- .0 11	. 0 1	- .0 2	.0 1	- .0 2	.0 0	- .0 0	. 0	- .0 0	. 0	- .0 0	- .0 0	.0 1	. 0	- .0 0	- .0 0	. 0	. 0	. 0	- .0 09	. 0	. 0	. 0

Anti - ima ge Corr	Q A1	.0 56	- .0 37	- .0 20	.0 14	- .0 41	- .0 21	.0 02	- .0 08	. 03	- .0 35	- .0 02	. 00	. 01	.0 10	- .0 03	- .0 04	. 00	. 03	- .0 13	- .0 02	.0 10	. 03	- .0 06
	Q A2	- .0 05	.0 02	- .0 20	.0 50	- .0 20	- .0 04	.0 07	. 00	- .0 01	- .0 00	. 02	. 00	. 01	. 02	- .0 24	- .0 22	. 00	. 00	. 08	. 00	. 01	.0 11	. 06
	Q 13	- .0 36	.0 45	- .0 04	- .0 40	.0 34	.0 31	- .0 14	- .0 34	. 00	- .0 21	. 00	. 01	. 02	.0 28	. 00	. 03	. 05	- .0 10	. 03	. 08	. 07	- .0 27	. 09
	UI 1	- .0 03	- .0 01	. 00	- .0 03	.0 35	.0 14	- .0 06	. 00	- .0 01	. 00	. 02	. 00	. 01	.0 26	. 02	- .0 01	. 00	. 01	- .0 01	- .0 02	- .0 00	.0 18	- .0 04
	UI 2	.0 11	- .0 40	. 03	- .0 03	.0 03	- .0 23	.0 28	. 00	. 02	- .0 00	. 00	. 00	. 02	.0 38	- .0 02	. 00	. 00	. 04	- .0 02	. 05	- .0 01	.0 10	- .0 09
	UI 3	.0 02	- .0 24	. 01	.0 26	- .0 37	.0 12	.0 01	. 00	- .0 00	. 00	. 00	. 00	. 02	.0 05	. 00	- .0 00	. 00	. 00	. 01	. 00	- .0 03	- .0 13	- .0 07
	IN F1 a	.9 01	- .4 45	- .1 21	- .1 10	- .0 84	- .0 53	.1 49	- .1 14	. 02	. 01	- .0 11	. 00	. 01	.0 32	. 00	. 01	- .0 08	. 01	- .0 03	- .0 00	- .0 01	.1 28	- .1 08

elati on	IN F2	- .4 45	.8 92 a	- .2 6 1	.0 4 7 9	- .1 6 4	.2 1 0 2	- .0 1 9 6	- .1 1 0 3	- .0 0 0 8	. 1 0 2	- .1 2 8	- .1 3 4	.0 2 6	- .0 4 7	- .1 1 2	. 1 3 7	. 0 1 2 9	- .0 95	- .0 1 6	. 0 2 3
	IN F3	- .2 11	- .2 61	. 9 3 3 a	- .2 0 0	.0 6 8 1	- .1 6 6	- .1 8 6	. 0 9 4 3	- .0 0 0 2 1	- .1 2 1 1	. 1 2 2	. 0 1 2	- .0 1 0 6	- .0 0 3 5	- .0 0 9 7	. 0 4 3 1	. 0 0 2 9	.0 33	- .0 1 7	. 0 2 1
	S S S1	- .1 10	.0 47	- .2 0 0	.9 0 8 a	- .4 1 6	- .0 9 5	- .1 0 0	. 0 8 4 6	- .0 1 0 1	. 0 3 6	. 0 3 7 2	. 0 0 1 2	.0 1 7	- .1 0 2 9	- .0 0 6 7	. 1 0 1 8	- .0 3 5 3	- .0 0 2 3	- .0 22	. 0 9 4 9
	S S S2	- .0 84	- .1 69	. 0 6 8	- .4 1 1	.8 9 6 a	- .3 9 2	- .1 7 0 1	. 0 5 0 7	. 1 5 1 3	- .0 5 8	- .0 1 6	. 0 0 1	.1 0 8	- .0 3 4	. 0 8 5	- .0 1 2 6	. 0 0 1 8	- .0 1 4 2	.1 44	- .0 2 6
	S S S3	- .0 53	.2 14	- .1 6 1	- .0 9 6	- .3 9 2	.8 8 7 a	- .1 3 8 9	. .0 0 2 2	. 1 0 5 1	- .0 0 2 1	- .0 0 4 2	- .0 0 4 2	. .0 3 4	- .0 4 6 3	. .2 0 6	- .0 1 0 0	. 0 0 4 3	- .0 2 39	. .2 4 2	- .0 8 1
	S S S4	.1 49	- .0 02	- .1 8 6	- .1 0 5	- .1 7 8	.9 2 8 a	- .0 9 8	. 0 4 7	. 0 8 2	. 0 4 6	- .0 7 0	- .0 0 4 0	. .1 8 0 3	- .0 2 9	. .0 2 5	- .0 0 6 4	. 0 5 2 1	. .0 4 1	.0 23	- .1 6 2 2
	F Q 1	- .1 42	- .1 96	. 0 9 6	.0 8 0 1	- .0 3 9	- .0 9 8	. 9 0 4 a	- .2 5 9	. 0 0 3 9	. 0 4 4	. 0 6 2	- .2 3 2	. .0 1 3	- .0 0 0 3	- .0 0 9 2	- .0 0 0 8	. 1 5 0 7	. .0 59	. 0 5 6	. 0 7 5

F Q 2	.0 29	- .1 03	- .0 43	- .1 46	.0 57	- .0 92	.0 44	- .0 25	. 91 ^a	- .0 39	. 13	- .0 14	- .0 67	- .0 41	. 02	- .0 89	- .0 17	. 01	. 10	- .0 47	- .0 40	- .0 05
U A1	.1 16	- .0 08	- .0 92	- .0 81	.1 57	- .0 72	.0 87	- .0 39	. 93 ^a	- .0 19	- .0 50	- .0 83	- .0 14	.1 24	. 04	- .0 03	- .0 05	. 06	- .0 17	.1 61	- .0 68	. 15
U A2	- .1 32	.1 02	- .0 21	.0 36	- .1 83	.1 05	.0 42	. 04	. 13	- .0 19	. 85 ^a	- .0 21	- .0 60	.1 13	. 04	. 15	- .0 03	. 06	. 02	.1 86	- .0 56	- .0 63
U A3	.0 96	- .1 28	- .0 11	.0 38	.0 51	- .0 24	- .0 64	. 04	- .0 77	- .0 86	. 91 ^a	- .0 39	. 51	.0 24	. 13	. 07	. 02	- .0 38	- .0 10	.0 04	. 06	- .0 21
U A4	- .1 36	- .1 34	. 12	.0 72	- .0 16	- .0 42	- .0 70	. 06	- .0 74	- .0 13	. 96 ^a	- .0 49	. 86	.0 24	. 05	. 03	. 11	- .0 91	- .0 75	.0 89	. 02	- .0 38
S S S5	.0 32	.0 26	- .0 10	.0 18	.1 03	- .0 40	- .0 82	- .0 32	. 14	- .0 24	. 91	- .0 53	- .0 86	.8 48 ^a	- .0 72	. 06	. 04	. 13	- .0 50	- .0 17	.1 45	. 03
F Q 3	.0 06	- .0 47	- .0 36	- .1 29	- .0 34	.0 46	- .0 43	. 01	- .0 61	. 04	. 05	- .0 41	- .0 24	- .0 72	. 97 ^a	- .0 15	. 08	- .0 14	- .0 23	. 08	- .0 70	. 09

T Q 1	.0 10	- .0 12	- .0 6 5	- .0 6 7	.0 8 5	- .0 6 3	.0 2 9	- .0 0 3	. 0 2 8	- .0 0 3	- .0 1 5	. 1 3 0	- .0 0 5	.0 0 6	- .0 0 5	. 9 1 0 ^a	- .0 2 4 6	- .0 2 4 4	. 0 3 3	. 0 0 2	- .0 23	. 0 8 2	- .0 0 2 6
T Q 2	- .0 86	.1 53	- .0 9 7	- .0 1 7	- .1 2 6	.2 0 5	- .0 0 2	- .0 0 9	- .0 0 3	- .0 0 5	. 1 2 6	. 0 2 7	- .0 0 3	.0 4 3	. 0 7 8	- .0 2 4 6 ^a	- .0 2 1 9	- .0 1 3 8	. 0 0 9	. 0 3 5	- .1 65	. 0 1 8	. 0 4 6
T Q 3	.1 30	- .1 37	. 0 4 3	.1 3 8	.0 0 1	- .1 0 0	- .0 6 4	- .0 0 8	- .0 1 6	- .0 0 2	- .0 0 3	. 0 2 1	. 1 1 1	.1 8 1	- .0 1 3	- .0 2 4 4	- .0 1 3 9 ^a	. 7 4 0	- .0 2 6 0	- .0 1 9	.2 21	- .1 3 1	- .0 9 8
T Q 4	- .0 05	.0 02	- .0 2 1	- .0 5 2	.0 1 8	.0 0 4	.0 5 2	. 1 5 7	. 0 1 6	. 0 0 5	. 0 0 3	- .0 0 3 8	- .0 0 9 1	- .3 5 0	- .0 2 0 3	. 0 3 8	- .0 9 6 0	. 8 2 7 ^a	. 0 3 7	. 0 0 7	- .0 17	- .0 4 4	. 0 0 3
T Q 5	- .1 01	.1 19	. 0 3 9	- .0 3 3	- .1 4 2	.2 0 3	- .0 4 1	- .0 2 3	. 1 0 4	- .0 1 7 9	. 2 0 9	- .0 1 3 0	- .0 0 5	- .1 1 7	. 0 8 0	. 0 0 2	. 0 3 5	- .0 1 9 9	. 0 6 7 ^a	. 6 96	- .7 3	. 0 1 6	. 0 4 6
T Q 6	.1 28	- .0 95	. 0 3 3	- .0 2 2	.1 4 4	- .2 3 9	.0 2 3	. 0 5 9	- .0 0 4 7	. 1 6 1	- .0 1 8 6	. 0 0 4	. 0 8 9	.1 4 5	- .0 7 0	- .0 2 3	- .0 6 5	. 2 1 1	- .0 1 7 6	. 7 9 6 ^a	.6 87	- .2 2 1	- .0 4 1 3
T Q 7	- .1 08	- .0 16	- .0 1 7	.0 9 4	- .0 2 6	.0 4 2	- .0 6 2	. 0 5 6	- .0 0 4 0	- .0 1 6 8	. 0 0 5	. 0 6 9	. 0 2 3	.0 3 1	- .0 9 2	. 0 8 2	- .0 1 8	- .0 1 3 1	- .0 4 4	. 0 1 3	- .2 21	. 8 6 ^a	- .0 1 6 1

T Q 8	- .0 53	.0 23	. 0 2 1	.0 4 9	.0 2 2	- .0 8 1	- .0 2 2	. 0 7 5	- .0 0 5	. 1 5 2	- .0 0 6 3	- .0 0 2 1	- .0 1 2 8	.0 3 0	. 0 4 9	- .0 0 2 6	. 0 4 6	- .0 1 9 8	. 0 3 0	. 0 4 6	- .1 43	- .1 6 1	. 7 9 8 a	
	- .0 68	.0 65	- .0 6 8	.1 0 6 5	- .0 4 5	.0 1 0 9	- .0 0 1 3	- .0 0 8 4	. 0 7 7	. 0 6 6	- .0 1 2 5	. 0 1 3	.0 1 7	- .0 0 1 7	- .0 2 4 8	. 0 0 7	. 0 1 8	- .0 0 5 3	. 0 3 7	- .1 83	- .1 5 8	. 0 9 0		
	- .0 02	.0 77	- .0 8 0	- .0 5 4	.0 1 1 5	- .0 0 6 5	.0 3 0 1	- .0 0 5 4	. 0 6 1 9	- .0 0 1 0	. 0 2 9	- .0 0 5 9	.0 2 6	- .0 0 3 8	. 0 5 2	. 0 0 6	. 0 2 5	- .0 0 5 5	. 0 1 4	- .1 70	- .0 7 7	. 0 1 3		
	.0 60	.0 26	. 0 1 8	.1 2 4 0	- .1 2 0	.0 3 1 5	.0 0 2 4	. 0 1 1 2	- .0 0 5 6	. 0 1 5 3	- .0 0 6 3	- .0 1 0 3	- .1 3 1	- .0 0 4 2	- .0 0 1 5	- .0 0 6 1	. 0 0 1 4	. 0 0 6	- .0 0 7 6	. 0 0 7	.0 00	- .0 4 2	- .1 0 2	
C C4	.0 23	- .0 17	. 0 1 1	- .1 5 7	- .0 0 8 7	.0 9 7	- .0 1 4 3	. 1 9 6	- .0 0 6 6	. 1 1 6 3	- .0 1 0 8	. 1 4 5	.1 1 7 0	. 1 0 1 3	- .0 0 8 3	- .0 0 5 7	. 0 4 2	- .0 0 1 8	. 0 0 2 1	- .0 0 1 1	- .0 0 1 1	.0 49	- .0 5 3	- .1 6 3
	- .1 16	- .0 70	. 1 4 9	- .1 8 2	.2 0 3	.1 3 6	. 0 2 5	- .0 0 2 1	- .0 0 1 6	. 0 4 1 6	- .0 0 1 6	- .0 0 3 0	.0 1 7	. 0 2 8 6	. 0 8 6	- .0 1 2 4	- .0 0 1 7	- .0 0 7 4	. 0 0 7 1	- .0 9 79	- .0 1 0 6	. 7 0 0		
M T2	.0 02	- .0 85	. 1 4 5	- .1 3 3	- .0 1 6 4	.0 7 1	. 0 2 2	. 0 2 0	. 0 6 5	. 0 3 3	- .0 0 8 2	. 0 7 8	- .0 3 2	. 0 9 5	- .0 0 9 9	. 1 0 6	. 0 2 2	- .0 0 4 4	- .0 0 6 6	.1 40	- .1 1 0	- .1 3 8		

M T3	- .1 19	.0 57	- .1 63	.0 64	.1 01	.0 55	- .0 73	. 11	- .0 09	. 05	. 04	- .0 00	- .0 01	- .0 06	- .0 05	. 12	- .0 24	- .0 34	. 14	- .0 46	.0 40	- .0 03	. 00
M T4	.1 14	- .0 92	- .0 03	- .0 03	- .0 94	.0 97	.0 36	- .1 59	. 11	. 00	- .0 09	. 00	- .0 02	- .0 12	- .0 39	. 00	- .0 27	- .0 53	. 15	. 02	.0 19	- .0 48	- .0 83
M T5	.0 34	.1 19	. 04	.0 64	- .1 23	.1 13	- .1 00	- .1 20	- .1 58	- .0 41	. 01	- .0 26	- .0 37	- .0 44	. 05	- .0 83	- .0 34	. 09	- .0 25	. 21	.2 13	. 06	. 00
S R1	- .0 04	.0 73	. 02	- .0 66	- .0 78	.0 60	.0 11	. 07	- .0 28	- .0 62	. 00	- .0 20	- .0 24	- .0 27	. 23	. 10	- .0 52	- .0 41	. 01	. 07	- .1 05	. 13	. 06
S R2	.0 61	- .1 53	. 08	.0 62	.0 86	- .0 32	- .0 35	- .1 92	- .0 21	. 06	. 00	- .0 58	- .0 12	. 04	.0 17	- .0 60	- .0 42	. 01	- .0 34	- .0 93	.0 53	- .0 74	. 02
S R3	.0 00	.0 00	- .0 81	.0 72	.0 71	- .1 36	- .0 41	. 01	. 05	. 04	. 05	- .0 62	. 04	. 07	.1 29	- .0 16	- .0 31	. 06	. 09	- .0 49	.1 04	- .0 44	- .0 11
S R4	- .0 49	.0 31	. 05	- .1 20	- .0 31	.1 12	.1 16	. 05	. 04	- .0 59	. 08	- .0 41	- .0 19	- .0 26	. 02	. 08	. 03	- .0 69	. 01	. 05	- .1 39	- .0 05	. 11

S R5	.0 75	- .0 75	- .0 01	.1 23 01	- .1 42	- .1 01	- .0 41	. 14 71	- .0 01	- .0 04	. 00 44	- .0 03	- .0 03	. 13 44	. 00 44	. 00 42	. 00 07	. 00 92	- .0 00	. 01 02	.0 48	- .0 01	- .0 03
C O L1	.0 61	.0 01	- .0 04 7	- .0 97	.0 08	.0 03	- .0 84 0	- .0 08 0	. 00 98 9	. 00 13 0	. 00 08 6	- .0 04 6	.0 89	. 16 10	- .0 06 0	- .0 03 8	. 00 12 6	. 00 27 4	- .0 06 4	- .0 07 4	.0 68	- .0 06 1	. 02 11
C O L2	- .0 04	.0 27	- .0 03 2	.0 04 5	.0 41 2	- .1 21	.0 76 3	- .0 03 3	- .0 18 8	. 10 04 1	- .0 04 4	. 02 08 7	- .1 30 3	- .0 11 8	- .0 06 1	. 00 08 6	. 00 28 8	- .0 09 7	. 00 10	.0 05	. 06 09	. 00 05	
IN TE R1	.0 05	.0 38	- .0 06	- .0 71	.0 42	.0 62	.0 02 4	. 02 46	- .0 22 6	- .0 04 3	. 00 02 5	- .0 03 5	- .1 20 3	. 00 08 0	- .0 04 0	. 00 16 3	. 00 28 3	- .0 04 7	. 00 10	.0 20	- .0 06 3	- .0 03 8	
IN TE R2	- .1 32	.2 37	- .0 01	.0 08 5	- .1 65	.1 04 1	- .0 11 1	. 00 13	. 00 18	. 00 08 9	- .0 03 5	- .1 21 4	. 00 07 0	- .0 04 0	. 00 14 2	. 00 28 4	- .0 09 8	- .0 01 7	. 00 08	.0 37	. 09 09	- .0 01 8	
IN TE R3	.0 52	- .0 50	. 00 52	- .1 10	.0 71 9	- .0 79	.0 21 2	. 00 09 2	. 00 16 3	. 00 03 3	. 00 13 3	. 00 07 1	- .1 24 5	- .0 05 8	- .0 00 2	. 00 12 2	. 00 21 1	. 00 09 4	. 00 03 4	- .0 47	. 00 26	. 01 00	
Q A1	.1 78	- .1 30	- .0 05 9	.0 44 9	- .0 49 2	- .0 62	.0 05	- .0 02 1	. 01 22	- .0 05 9	. 00 11 4	. 00 15 4	.0 24	- .0 07 9	- .0 01 9	. 00 06 5	. 00 15 1	- .0 07 9	- .0 04	.0 40	. 08 04	- .0 01 2	

Q A2	- .0 19	.0 06	- .0 68	.1 84	- .0 04	- .0 14	.0 19	. 02	- .0 15	- .0 47	. 14	- .0 69	. 06	- .0 66	. 06	- .0 66	. 05	- .0 55	. 26	. 02	. 01	.0 50	. 01	- .0 64	- .0 43
Q 13	- .1 23	.1 67	- .0 14	- .1 40	.1 29	.0 97	- .0 36	- .0 12	- .0 46	. 13	- .0 42	. 06	- .0 14	.0 72	. 00	. 09	. 03	- .0 87	. 24	. 09	. 03	- .1 19	. 07	. 04	. 08
UI 1	- .0 07	- .0 02	. 01	- .0 95	.1 07	.0 36	- .1 38	. 03	- .0 96	. 04	- .0 82	. 10	- .0 43	.0 55	. 06	- .0 33	. 02	- .0 20	- .0 22	- .0 33	- .0 31	.0 62	- .0 97	. 04	. 01
UI 2	.0 30	- .1 27	. 08	- .0 79	.0 11	- .0 61	.0 39	. 00	. 07	- .0 37	- .0 13	. 00	- .0 36	. 08	- .0 45	. 01	- .0 29	- .0 67	. 04	- .0 15	- .0 55	.0 36	- .0 91	- .0 25	- .0 05
UI 3	.0 05	- .0 82	. 05	.0 83	- .1 29	.0 34	.0 11	. 00	- .0 15	. 02	- .0 41	. 00	- .0 06	. 01	- .0 12	. 01	- .0 11	. 02	. 07	. 05	- .0 10	- .0 53	- .0 40	- .0 05	- .0 05

Communalities

	Initial	Extraction
INF1	.735	.625
INF2	.779	.718
INF3	.704	.660
SSS1	.749	.739
SSS2	.787	.775

SSS3	.686	.620
SSS4	.572	.492
FQ1	.660	.574
FQ2	.654	.581
UA1	.869	.838
UA2	.933	.938
UA3	.898	.894
UA4	.814	.808
SSS5	.545	.451
FQ3	.490	.469
TQ1	.493	.524
TQ2	.449	.327
TQ3	.539	.525
TQ4	.439	.373
TQ5	.830	.814
TQ6	.844	.882
TQ7	.524	.534
TQ8	.451	.345
CC1	.414	.371
CC2	.420	.405
CC3	.543	.580
CC4	.494	.522
MT1	.544	.437
MT2	.605	.642
MT3	.538	.460
MT4	.616	.531
MT5	.629	.577

SR1	.865	.792
SR2	.880	.874
SR3	.915	.884
SR4	.902	.889
SR5	.614	.563
COL1	.468	.458
COL2	.524	.500
INTER1	.380	.261
INTER2	.744	.667
INTER3	.768	.713
QA1	.626	.553
QA2	.701	.744
Q13	.679	.639
UI1	.495	.391
UI2	.544	.518
UI3	.609	.591

Extraction Method: Principal Axis Factoring.

Total Variance Explained

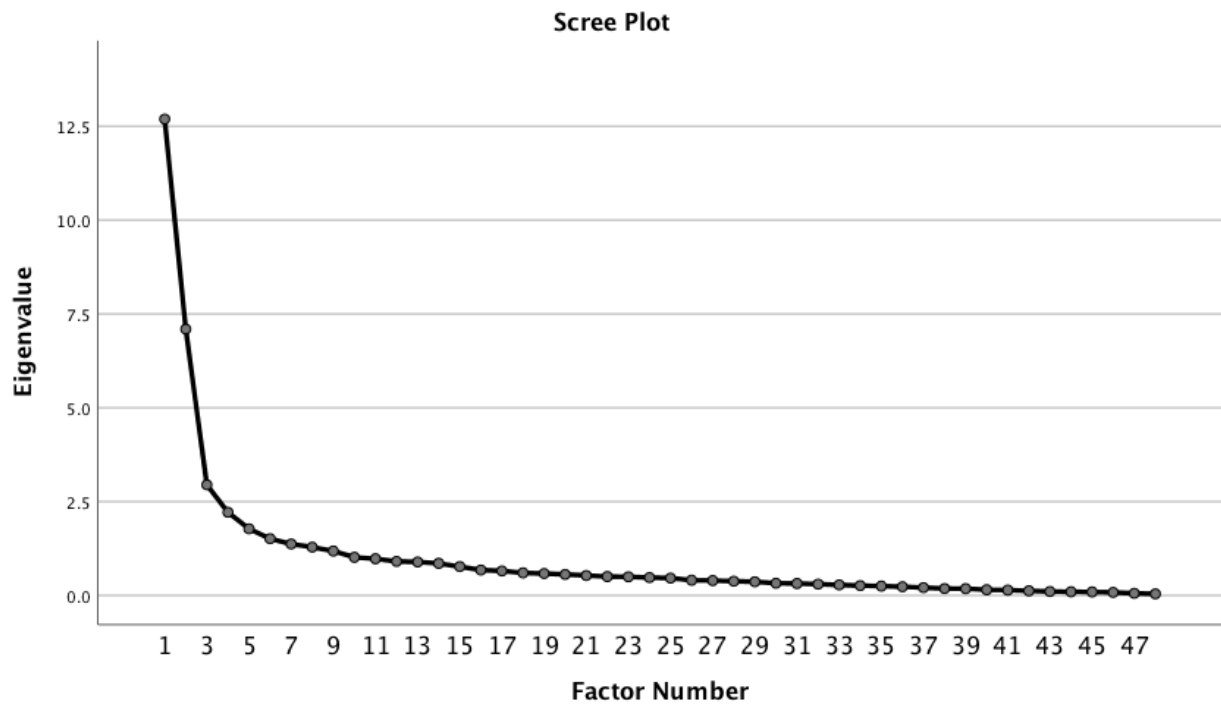
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	12.689	26.435	26.435	12.378	25.788	25.788	8.766

2	7.095	14.780	41.215	6.722	14.004	39.791	5.243
3	2.947	6.139	47.354	2.611	5.439	45.231	2.583
4	2.214	4.613	51.967	1.884	3.924	49.155	8.310
5	1.775	3.699	55.665	1.338	2.787	51.942	6.020
6	1.511	3.148	58.813	1.031	2.149	54.091	1.640
7	1.369	2.853	61.666	.905	1.885	55.975	4.768
8	1.286	2.679	64.345	.853	1.776	57.751	1.362
9	1.182	2.462	66.807	.766	1.596	59.347	1.374
10	1.016	2.116	68.923	.579	1.207	60.554	7.929
11	.978	2.037	70.960				
12	.907	1.889	72.849				
13	.890	1.855	74.704				
14	.854	1.780	76.484				
15	.768	1.600	78.084				
16	.677	1.410	79.494				
17	.652	1.359	80.853				
18	.601	1.252	82.104				
19	.582	1.213	83.318				
20	.561	1.168	84.486				
21	.531	1.106	85.592				
22	.504	1.050	86.642				
23	.497	1.034	87.677				
24	.475	.990	88.667				
25	.462	.962	89.628				
26	.406	.846	90.474				
27	.396	.824	91.298				
28	.378	.788	92.086				

29	.365	.761	92.847				
30	.325	.677	93.524				
31	.318	.661	94.186				
32	.302	.629	94.815				
33	.280	.583	95.398				
34	.263	.547	95.945				
35	.250	.521	96.465				
36	.232	.483	96.949				
37	.208	.434	97.383				
38	.185	.385	97.768				
39	.181	.376	98.144				
40	.152	.317	98.461				
41	.141	.294	98.755				
42	.123	.256	99.011				
43	.105	.218	99.229				
44	.099	.205	99.434				
45	.093	.194	99.628				
46	.080	.167	99.795				
47	.056	.117	99.912				
48	.042	.088	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total varia



Factor Matrix^a

		Factor									
		1	2	3	4	5	6	7	8	9	10
SR4		.761	-.422								
SR3		.750	-.408								
UA3		.742	-.493								
SR2		.729	-.405								
SSS2		.719									
SR1		.713	-.431								
UA2		.711	-.545								
INTER 3		.708									
UA4		.688	-.451								

SSS1	.685									
INF3	.678									
INF2	.675									
FQ2	.663									
UA1	.656	-.524								
INTER 2	.638	-.406								
SR5	.632									
SSS3	.632									
INF1	.624									
FQ1	.596									
SSS4	.584									
TQ1	.527									
FQ3	.524									
SSS5	.495									
QA1	.449	.423								
CC3	.407	-.401								
TQ4	.401									
INTER 1										
COL1										
TQ2										
MT2		.619								
MT4		.614								
MT1		.542								
MT3		.540								
MT5		.529								
QA2		.499								

UI3	.431	.498								
UI2		.493								
TQ7		.462								
Q13	.413	.460								
UI1		.456								
CC1		.455								
COL2		.418								
TQ5			.819							
TQ6			.800							
CC2			.532							
CC4										
TQ8										
TQ3										

Extraction Method: Principal Axis Factoring.^a

a. 10 factors extracted. 10 iterations required.

Reproduced Correlations

		I N F 1		I N F 2	S S F 3	S S S 1	S S S 2	S S S 3	S S S 4	F Q 1	F Q 2	U A 1	U A 2	U A 3	U A 4	S S 5	F Q 3	T Q 1	T Q 2	T Q 3	T Q 4	T Q 5	T Q 6	T Q 7	T Q 8	C C 1
Rep rodu ced Corr elati on	IN F1	. 6 2 5 a	. 6 5 3	. 6 2 2	. 5 5 3	. 6 0 7	. 5 2 4	. 5 7 9	. 4 0 3	. 5 4 1	. 3 6 2	. 4 1 4	. 4 3 6	. 4 3 7	. 3 0 6	. 3 8 6	. 3 1 8	. 1 6 4	. 1 8 2	. 1 7 9	. 0 2 3	. 0 6 4	. 2 4	. 1 5 8	. 2 4	
	IN F2	. 6 5 3	. 7 1 8 a	. 6 3 5	. 5 3 5	. 6 1 2	. 5 2 6	. 5 0 5	. 5 4 9	. 5 9 2	. 3 6 4	. 4 2 9	. 4 6 0	. 4 4 6	. 3 4 4	. 3 4 6	. 4 6	. 3 2 6	. 1 7 4	. 2 3 2	. 2 1 4	. 0 0 6	. 0 4 7	. 2 5 0	. 1 6 6	. 2 6 3

	IN F3	. 6 2 2	.6 35	. 6 6 0 a	. 6 1 8	. 6 2	. 5 7	. 5 2 4	. 5 0 6	. 5 3 8	.4 04	. 4 5 1	. 4 7 2	. 4 7 3	. 3 4 9	.4 17	. 3 5 9	. 1 8 6	. 1 9 6	. 2 3 9	. 1 0 1	. 1 3 2	.1 97	. 1 5 8	. 2 2
	S S S1	. 5 5 3	.5 35	. 6 1 8 a	. 7 3 9 a	. 7 3 7	. 6 6 5	. 5 5 8	. 4 7 1	. 5 0 4	.3 17	. 3 5 0	. 3 8 1	. 3 8 0	. 3 0 7	.3 82	. 3 7 2	. 2 4	. 1 8 7	. 2 6 0	. 1 8 0	. 2 3 7	.2 05	. 1 5 1	. 1 5 8
	S S S2	. 6 0 7	.6 12	. 6 6 2	. 7 3 7 a	. 7 5	. 6 8 4	. 5 9 1	. 5 0 2	. 5 3 9	.3 79	. 4 3 1	. 4 5 7	. 4 4 6	. 3 1 9	.4 01	. 3 6 3	. 2 0 4	. 1 8 0	. 2 5 9	. 1 6 9	. 2 2 6	.1 92	. 1 3 1	. 1 4 5
	S S S3	. 5 2 4	.5 26	. 5 7 7	. 6 6 5	. 6 8 4	. 6 2 0 a	. 5 3 1	. 4 5 5	. 4 6 8	.2 78	. 3 1 7	. 3 5 0	. 3 3 5	. 2 8 9	.3 71	. 3 1 6	. 2 0 7	. 1 7 0	. 2 3 6	. 1 8 4	. 2 3 7	.2 07	. 1 4 7	. 1 5 1
	S S S4	. 4 7 9	.5 05	. 5 2 4	. 5 5 8	. 5 9 1	. 5 3 1	. 4 9 2 a	. 4 0 7	. 4 4 0	.2 56	. 2 9 7	. 3 3 5	. 3 1 9	. 3 1 2	.4 01	. 2 9 2	. 1 9 4	. 2 2 0	. 2 7 5	. 1 6 0	. 1 9 3	.2 21	. 1 5 5	. 1 4 8
	F Q 1	. 5 0 3	.5 49	. 5 0 6	. 4 7 1	. 5 0 2	. 4 5 7	. 4 0 4 a	. 5 7 4	. 5 2 5	.2 33	. 2 7 2	. 2 9 4	. 2 7 2	. 2 9 3	.3 57	. 3 7 6	. 2 4 1	. 2 2 1	. 1 4 7	- 0 4 3	. 0 1 3	.1 39	. 0 9	. 3 1
	F Q 2	. 5 4 1	.5 92	. 5 3 8	. 5 0 4	. 5 3 9	. 4 6 8	. 4 4 0	. 5 2 5 a	. 5 8 1	.3 22	. 3 6 6	. 3 9 1	. 3 8 3	. 2 9	.4 02	. 4 3 4	. 2 8 0	. 3 2 5	. 2 3 9	. 0 0 4	. 0 5 5	.2 28	. 1 6 4	. 2 7 9

U A1	. 3 6 2	.3 64	. 4 0 4	. 3 1 7	. 3 7 9	. 2 7 8	. 2 5 6	. 2 3 3	. 3 2 2	.8 38 a	. 8 8 1	. 8 5 1	. 8 0 6	. 2 9 2	.1 69	. 2 9 7	. 0 3 1	. 0 0 4	. 1 7 9	. 2 7 8	. 3 2 1	- .0 71	- 0 1 0	- .0 8 9
U A2	. 4 1 4	.4 29	. 4 5 1	. 3 5 0	. 4 3 1	. 3 1 7	. 2 9 7	. 2 7 2	. 3 6 6	.8 81	. 9 3 8	. 9 0 9	. 8 5 8	. 3 2 5	.2 01	. 2 9 9	. 0 1 6	- .0 0 1	. 1 9 5	. 2 3 1	. 3 0 1	- .0 81	- 0 0 9	- .0 1 0
U A3	. 4 3 6	.4 60	. 4 7 2	. 3 8 1	. 4 5 7	. 3 5 0	. 3 3 5	. 2 9 4	. 3 9 1	.8 51	. 9 0 9	. 8 9 4	. 8 3 9	. 3 6 5	.2 56	. 3 0 2	. 0 4 2	. 0 3 3	. 2 7 5	. 2 3 2	. 3 2 1	- .0 24	. 0 2 6	- .0 7 8
U A4	. 4 3 7	.4 46	. 4 7 3	. 3 8 0	. 4 4 6	. 3 3 5	. 3 1 9	. 2 7 2	. 3 8 3	.8 06	. 8 5 8	. 8 3 9	. 8 0 8	. 3 4 1	.2 42	. 3 0 1	. 0 4 0	. 0 4 1	. 2 7 4	. 2 0 4	. 2 4 1	- .0 28	. 0 1 9	- .0 5 8
S S S5	. 3 0 6	.3 44	. 3 4 9	. 3 0 7	. 3 1 9	. 2 8 9	. 3 1 2	. 2 9 3	. 2 9 9	.2 92	. 3 2 5	. 3 6 5	. 3 4 1	. 4 5 1	.3 85	. 1 6 6	. 0 9 6	. 1 0 5	. 3 1 2	. 0 0 4	. 0 0 9	.0 41	. 0 3 1	. 0 5 3
F Q 3	. 3 8 6	.4 46	. 4 1 7	. 3 8 2	. 4 0 1	. 3 7 1	. 4 0 1	. 3 5 7	. 4 0 2	.1 69	. 2 0 1	. 2 5 6	. 2 4 2	. 3 8 5	.4 69 a	. 2 6 2	. 2 1 7	. 3 0 4	. 3 5 1	. 0 9 4	. 0 9 6	.2 57	. 1 8 8	. 1 9 0
T Q 1	. 3 1 8	.3 26	. 3 5 9	. 3 7 2	. 3 6 3	. 3 1 6	. 2 9 2	. 3 7 6	. 4 3 4	.2 97	. 2 9 9	. 3 0 2	. 3 0 1	. 1 6 6	.2 62	. 5 2 4	. 3 5 8	. 3 9 8	. 3 1 7	. 2 5 1	. 1 9 3	.1 87	. 1 8 9	. 2 6 1
T Q 2	. 1 6 4	.1 74	. 1 8 6	. 2 4 4	. 2 0 4	. 2 0 7	. 1 9 4	. 2 4 1	. 2 8 0	.0 31	. 0 1 6	. 0 4 2	. 0 4 0	. 0 9 6	.2 17	. 3 5 8	. 3 2 7	. 3 6 0	. 1 8 2	. 1 5 8	. 1 8 9	.2 62	. 2 2 4	. 2 4 2

T Q 3	.	.2	.	.	.	.	.	.	.	.0	-	.	.	.	.3	.	.	.	.	.	.	.3	.	.
	1	32	1	1	1	1	2	2	3	04	.	0	0	1	04	3	3	5	2	1	1	58	2	2
	8		9	8	8	7	2	2	2		0	3	4	0		9	6	2	7	5	5		8	8
	2		6	7	0	0	0	1	5		0	3	1	5		8	0	5	2	3	6		4	0
											1							a						
T Q 4	.	.2	.	.	.	.	.	.	.	.1	.	.	.	.	.3	.	.	.	.	.	.	.1	.	.
	1	14	2	2	2	2	2	1	2	79	1	2	2	3	51	2	1	2	3	1	1	58	1	0
	7		3	6	5	3	7	4	3		9	3	2	1		1	8	7	7	5	3		2	3
	9		9	6	9	6	5	7	9		5	5	7	2		7	2	2	3	0	9		1	1
																		a						
T Q 5	.	.0	.	.	.	.	.	-	.	.2	.	.	.	.	.0	.	.	.	.	.	.	.3	.	-
	0	06	1	1	1	1	1	.	0	78	2	2	2	0	94	1	1	1	1	8	8	18	3	.
	2		0	8	6	8	6	0	0		5	7	0	0		5	5	5	5	1	3		4	0
	3		1	0	9	4	0	4	4		3	2	4	4		1	8	3	0	4	4		3	3
								3											a				5	
T Q 6	.	.0	.	.	.	.	.	.	.	.3	.	.	.	.	.0	.	.	.	.	.	.	.3	.	-
	0	47	1	2	2	2	1	0	0	21	3	3	2	0	96	1	1	1	1	8	8	38	3	.
	6		3	3	2	3	9	1	5		0	2	4	0		9	8	5	3	3	8		5	0
	4		2	7	6	7	3	3	5		1	1	1	9		3	9	6	9	4	2		2	2
																			a				2	
T Q 7	.	.2	.	.	.	.	.	.	.	-	-	-	-	.	.2	.	.	.	.	.	.	.5	.	.
	2	50	1	2	1	2	2	1	2	.0	.	.	.	0	57	1	2	3	1	3	3	34	4	2
	2		9	0	9	0	2	3	2	71	0	0	0	4		8	6	5	5	1	3	a	0	6
	4		7	5	2	7	1	9	8		8	2	2	1		7	2	8	8	8	8		4	7
											1	4	8											
T Q 8	.	.1	.	.	.	.	.	.	.	.0	-	.	.	.	.1	.	.	.	.	.	.	.4	.	.
	1	66	1	1	1	1	1	1	1	10	.	0	0	0	88	1	2	2	1	3	3	04	3	2
	5		5	5	3	4	5	0	6		0	2	1	3		8	2	8	2	4	5		4	2
	8		8	1	1	7	5	9	4		0	6	9	1		9	4	4	1	3	2		5	1
											9											a		
C C 1	.	.2	.	.	.	.	.	.	.	-	-	-	-	.	.1	.	.	.	.	-	-	.2	.	.
	2	63	2	1	1	1	1	3	2	.0	.	.	.	0	90	2	2	2	0	.	.	67	2	3
	4		2	5	4	5	4	0	7	89	1	0	0	5		6	4	8	3	0	0		2	7
	7		2	8	5	1	8	1	9		0	7	5	3		1	2	0	1	3	2		1	1
											0	8	8							5	2		a	

	C C 2	- .0 58	- .1 26	. 0 5	. 0 6	. 0 1	. 0 3	. 0 6	- .1 4	- .1 3	.0 60	. 0 8	. 0 2	. 0 3	- .0 0	- .0 09	- .0 2	. 0 3	- .0 3	. 0 5	. 4 1	. 3 9	.1 43	. 1 8	- .0 4
	C C 3	. 1 09	.0 65	. 2 02	. 2 4	. 1 7	. 1 4	. 1 4	. 0 2	. 1 01	.5 05	. 4 97	. 4 9	. 4 8	. 2 9	.1 65	. 1 9	. 0 7	. 0 3	. 2 7	. 2 9	. 2 8	- .0 27	. 0 57	- .1 02
	C C 4	. 0 72	.0 19	. 1 6	. 1 9	. 0 7	. 1 2	. 0 4	. 1 7	. 0 0	- .0 99	- .1 5	- .1 2	- .1 1	. 0 1	.1 34	. 1 6	. 2 3	. 1 5	. 0 7	. 2 6	. 2 7	.2 72	. 2 8	. 2 5
	M T1	. 2 04	.2 06	. 1 4	. 2 6	. 1 7	. 1 3	. 1 5	. 2 3	. 2 4	- .1 56	- .1 6	- .1 2	- .1 1	. 0 3	.1 32	. 1 4	. 2 1	. 1 7	. 0 1	- .0 3	. 0 1	.3 06	. 2 0	. 2 0
	M T2	. 2 33	.2 55	. 1 5	. 2 9	. 2 6	. 2 9	. 1 1	. 2 1	. 2 9	- .2 26	- .2 2	- .1 6	- .1 5	. 0 9	.1 87	. 0 8	. 1 9	. 1 5	. 0 6	- .1 2	- .0 7	.3 18	. 1 2	. 2 3
	M T3	. 1 09	.1 14	. 0 5	. 1 2	. 0 4	. 0 3	. 0 3	. 1 5	. 1 4	- .2 76	- .2 9	- .2 4	- .2 3	. 0 2	.1 32	. 0 4	. 1 7	. 1 3	. 0 2	- .0 8	- .0 5	.2 90	. 1 8	. 2 5
	M T4	. 2 64	.2 99	. 0 3	. 2 1	. 2 6	. 2 3	. 1 8	. 3 4	. 3 7	- .1 58	- .1 5	- .1 1	- .1 1	. 0 7	.2 07	. 2 4	. 2 8	. 2 6	. 0 4	- .0 7	- .0 2	.3 17	. 2 1	. 3 5

M T5	. 2 8 1	.3 00	. 2 0 6	. 2 8 4	. 2 5 7	. 2 5 8	. 1 8 2	. 3 6 4	. 3 4 8	- .0 87	- .0 79	- .0 48	- .0 54	. 0 2 3	.1 30	. 2 2 9	. 2 4 2	. 1 7 4	- .0 28	- .1 21	- .0 23	.2 45	. 1 4 0	. 2 9 3
S R 1	. 2 6 7	.3 24	. 3 1 9	. 3 1 6	. 3 5 8	. 2 9 7	. 3 0 0	. 3 2 8	. 3 5 6	.6 30	. 6 7 9	. 6 8 8	. 6 0 7	. 4 3 0	.3 03	. 3 1 6	. 1 2 9	. 1 0 7	. 3 1 5	. 1 6 8	. 2 2 7	- .0 96	- .0 48	- .0 83
S R 2	. 2 7 0	.3 45	. 3 2 0	. 2 9 6	. 3 4 5	. 2 9 9	. 3 1 3	. 3 5 8	. 3 5 0	.6 04	. 6 5 6	. 6 7 7	. 5 7 6	. 4 7 3	.3 46	. 2 8 0	. 1 2 2	. 0 9 6	. 3 2 1	. 2 1 1	. 2 7 0	- .0 68	- .0 20	- .0 5
S R 3	. 2 7 2	.3 42	. 3 2 2	. 3 3 0	. 3 7 3	. 3 2 1	. 3 2 7	. 3 4 1	. 3 6 1	.6 21	. 6 4 4	. 6 5 7	. 5 9 4	. 4 6 4	.3 43	. 2 9 4	. 1 3 7	. 1 0 9	. 3 4 1	. 2 2 7	. 2 9 3	- .0 52	- .0 17	- .0 8
S R 4	. 2 7 2	.3 34	. 3 2 7	. 3 4 7	. 3 8 5	. 3 2 4	. 3 1 8	. 3 4 0	. 3 7 0	.6 49	. 7 0 1	. 7 1 3	. 6 2 4	. 4 9	.3 17	. 3 1 3	. 1 3 4	. 0 9 5	. 3 3 3	. 1 9 5	. 2 6 0	- .0 97	- .0 49	- .0 4
S R 5	. 3 0 4	.3 49	. 3 3 4	. 3 5 4	. 3 8 4	. 3 2 8	. 3 1 3	. 3 1 8	. 3 4 7	.4 92	. 5 4 2	. 5 6 3	. 5 0 3	. 4 0 5	.3 01	. 2 2 9	. 0 9 7	. 0 5 8	. 2 7 7	. 0 7 0	. 1 2 8	- .0 45	- .0 42	- .0 7
C O L1	. 1 8 6	.1 79	. 2 1 8	. 3 8 0	. 3 3 6	. 3 0 5	. 2 1 8	. 2 2 1	. 2 8 6	.1 30	. 1 3 5	. 1 3 9	. 1 4 4	. 0 5 6	.1 31	. 2 9 3	. 2 3 1	. 1 8 2	. 1 5 0	. 0 9 4	. 1 4 3	.0 89	. 7 2	. 6 8
C O L2	. 2 0 7	.2 16	. 2 2 1	. 3 4 4	. 2 9 3	. 2 8 0	. 2 0 1	. 3 0 5	. 3 2 4	.0 09	. 0 1 0	. 0 1 1	. 0 3 0	. 0 5 6	.1 61	. 3 0 9	. 2 6 9	. 2 2 3	. 1 1 4	. 0 0 3	. 0 4 0	.1 17	. 0 9 9	. 1 8 9

	INTER 1	.183	.196	.205	.224	.226	.219	.218	.228	.209	.217	.223	.230	.224	.228	.220	.227	.227	.202	.205	.280	.206	.208
	INTER 2	.217	.222	.290	.235	.239	.229	.222	.230	.206	.263	.238	.215	.231	.239	.234	.209	.229	.220	.225	-.098	-.038	-.016
	INTER 3	.271	.285	.352	.341	.340	.334	.332	.334	.293	.262	.263	.257	.241	.293	.235	.213	.213	.237	.220	-.077	-.010	-.047
	QA1	.281	.327	.293	.231	.229	.230	.238	.237	.286	.293	.217	.218	.214	.256	.225	.223	.219	.210	.219	.207	.209	.224
	QA2	.269	.347	.263	.223	.221	.223	.230	.236	-2.81E-5	.201	.204	.202	.217	.292	.217	.218	.218	.219	.207	.207	.188	.218
	Q13	.273	.328	.281	.229	.227	.223	.230	.232	.268	.207	.209	.206	.213	.264	.227	.224	.223	.210	.217	.221	.237	.229
	UI1	.178	.242	.152	.143	.150	.144	.149	.122	-.089	-.074	-.050	-.050	.020	.194	.124	.125	.128	.109	.105	.240	.179	.118
	UI2	.192	.269	.171	.189	.196	.193	.191	.127	-.076	-.057	-.052	-.037	.029	.234	.177	.188	.188	.146	.146	.291	.216	.187

UI	3	.3	.3	.3	.3	.3	.3	.3	.3	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.3	.0	.0	
		3	82	2	3	3	3	2	3	3	60	0	1	0	0	78	2	2	2	1	1	2	09	2	2
		1		9	1	1	0	7	3	8		8	1	9	8		6	4	9	5	7	0		4	3
		3		7	0	8	1	1	0	1		3	0	3	3		2	7	7	2	9	2		8	2
Residual	IN	F1	b		.1	12	.0	.0	-	-	-	.0	.0	-	.0	-	.0	-	-	.0	.0	.0	.0	.0	.0
	IN	F2	1	1	2	.0	-	-	-	-	.0	.0	-	.0	-	.0	-	-	.0	.0	.0	.0	.0	.0	
																									9
	IN	F3	0	5	9	.0	-	-	-	-	.0	-	.0	-	.0	-	.0	-	-	.0	.0	.0	.0	.0	.0
	SS	S1	0	2	8	.0	-	-	-	-	.0	-	.0	-	.0	-	.0	-	-	.0	.0	.0	.0	.0	.0
SS	S2	0	0	2	.0	0	1	0	0	.0	0	.0	0	.0	0	.0	0	1	0	.0	.0	.0	.0	.0	
																									06
SS	S3	0	60	4	.0	0	0	4	0	.0	0	0	0	.0	0	.0	0	3	0	.0	.0	.0	.0	.0	
																									0
SS	S4	0	58	2	.0	0	2	3	0	.0	0	0	0	.0	0	.0	0	3	0	.0	.0	.0	.0	.0	
																									8

F	.0	-	-	.	.	.	.	.	-	-	.	.	-	-	.	-	.	-	.	-	-	-
Q	0	.46	.	.	.	0	0	0	.0	.	.	0	1	.0	.	0	.	.	0	0	.0	.
1	2		0	0	0	0	3	6	01	0	0	0	0	10	0	2	0	0	2	1	06	0
	2		5	4	2	1	0	5		1	1	7	0		2	2	1	1	7	1		3
			9	8	3					2	3				5		0	7			8	3
F	-	.0	-	.	-	.	-	.	.0	-	.	.	-	.0	-	.	.	-	.	.	-	-
Q	.	.00	.	0	.	0	.	0	.08	.	0	0	.	.26	.	0	0	.	0	0	.0	.
2	0		0	2	0	2	0	6		0	1	0	0		0	3	1	0	0	3	01	0
	1		0	2	3	2	1	5		2	9	0	0		5	5	5	0	0	5		4
	2		3		8		9			5			4		0		7				3	2
U	-	-	.	.	-	.	-	.		.	.	.	.	.0	.	-	.	.	.	-	.0	-
A1	.	.0	0	0	.	0	.	.	0	0	0	0	0	.05	0	.	0	0	0	.	.32	.
	0	.18	1	1	0	1	0	0		2	1	0	0		0	0	0	0	0	0		0
	4		3	6	0	3	0	0	8	5	0	1	5		5	0	9	0	4	1		3
	2				7		4	1							5				3		4	4
U	-	-	-	.	.	.	.	-	.0	.	.	.	.	.0	.	-	.	.	-	.	-	-
A2	.	.0	.	0	0	0	0	.	.25		0	0	0	.12	0	.	0	0	.	0	.0	0
	0	.33	0	0	1	0	1	0		1	0	3			2	0	0	1	0	0	.10	1
	2		0	4	3	8	0	1	2	6	5	1			5	3	7	2	1	2		6
	3		5					2	5						1			1				4
U	-	-	.	-	-	.	.	-	.0	.		-	.	.0	-	-	.	.	.	.	-	.
A3	.	.0	0	.	.	0	0	.	.10	0		.	0	.08	.	.	0	0	0	0	.0	0
	0	.17	1	0	0	0	1	0		1		0	1		0	0	0	1	0	0	.22	0
	3		1	0	0	5	6	1	9	6		0	2		0	1	6	4	9	5		2
	4			3	3			3			2				3	9						5
U	.	-	-	-	.	-	.	.	.0	.	-		.	.0	.	-	-	.	.	.	-	-
A4	0	.0	.	.	0	.	0	0	.01	0	.		0	.11	0	.	.	0	0	0	.0	0
	1	.05	0	0	0	0	1	0		0	0		3		0	0	0	3	1	0	.15	2
	3		3	2	5	0	9	7	0	5	0	2	5		8	0	1	4	2	7		9
			4	0		5					2					9	7					8
S	-	-	-	-	-	.	.	-	.0	.	.	.		.0	.	-	-	.	.	.	-	-
S	.	.0	.	.	.	.	0	1	.05	0	0	0		.27	0	.	.	1	0	0	.0	.
S5	0	.32	0	0	0	0	6	0		3	1	3			1	0	0	2	3	1	.35	0
	4		4	3	2	1	9	0	0	1	2	5			7	1	7	4	0	5		3
	7		8	2	6	2		4								6	3				5	0

F Q 3	- .0 0 3 0	- .02 0 2 0	. 0 0 2 3	. 0 0 2 3	- .0 0 0 5	- .0 0 1 6	- .0 0 0 5	- .0 0 1 0	. 0 2 6	.0 05	. 0 1 2 2	. 0 0 8	. 0 1 1 7	. 0 2 1 7	- 0 0 1 2 4	- .0 0 1 3 6	. 0 0 6 4	. 0 0 0 4	. 0 0 3 0	. 0 0 5 5	- .0 0 6 2 4	- .0 0 0 2 4	- .0 0 0 4 5
T Q 1	- .0 0 0 3	- .06 0 6 4	. 0 1 4	. 0 0 7	- .0 0 0 4	. 0 2 0 8	- .0 0 0 5	- .0 0 2 5	. 0 0 2 0	.0 05	. 0 2 5 3	- .0 0 0 8	. 0 0 1 7	. 0 1 1 7	- .0 12 0 0	. 0 5 1	. 0 0 7	. 0 0 2	- .0 0 0 3	- .0 0 0 5	- .0 41 0 1	. 0 1 1	. 0 5 7
T Q 2	. 0 5 9	- .02 0 2	. 0 3 6	. 0 2 7	. 0 1 2	- .0 0 7 4	- .0 0 3 6	. 0 2 2	. 0 3 5	- .0 05 0 5	. 0 0 3 1	- .0 0 0 9	- .0 0 0 9	- .0 0 1 6	- .0 34 5 1	. 0 0 1	- .0 0 9	. 0 2 6	. 0 2 4	. 0 0 4	.0 03	- .0 0 8 7	- .0 0 4 0
T Q 3	- .0 0 2 9	.0 14	- .0 0 8	- .0 0 9	. 0 1 5	. 0 3 6	- .0 0 1 0	- .0 0 1 5	. 0 0 1 0	.0 09	. 0 0 7	. 0 0 6	- .0 0 1 7	- .0 0 0 3	.0 16	. 0 0 7	- .0 0 1 9	. 0 3 1	- .0 0 0 2	- .0 0 4 0	- .0 16 5	. 0 5 5	- .0 0 1 6
T Q 4	- .0 0 0 7	- .02 0 2	- .0 0 1 7	. 0 0 1	- .0 0 2 8	- .0 0 3 7	- .0 0 1 3	- .0 0 0 7	. 0 0 1 7	.0 00	. 0 1 2	. 0 1 4	. 0 3 4	. 0 2 4	.0 64	. 0 0 2	. 0 0 6	. 0 2 1	. 0 3 9	. 0 0 9	- .0 17 3	- .0 0 7	- .0 0 1
T Q 5	. 0 2 2	.0 13	- .0 0 6	. 0 0 3	- .0 0 1 2	- .0 0 4 3	. 0 0 2	. 0 0 7	. 0 0 0	.0 04	. 0 0 1	. 0 0 9	. 0 1 2	. 0 0 0	.0 00	- .0 0 3	. 0 0 4	- .0 0 2	. 0 0 9	. 0 3 5	- .0 10 3	- .0 0 7	- .0 0 9
T Q 6	. 0 0 2	.0 11	. 0 0 0	. 0 0 1	- .0 0 3 5	- .0 0 0 5	- .0 0 0 5	. 0 1 1	. 0 3 5	- .0 13 0	. 0 0 2	. 0 0 5	. 0 0 7	. 0 1 5	.0 35	- .0 0 0 5	. 0 4 0	- .0 0 4	. 0 0 9	. 0 2 3	.0 05	- .0 0 2 1	- .0 0 4 6

T Q 7	.	4.	.	-	-	.	.	-	-	.0	-	-	-	-	-	.	-	-	-	-	.		.	.
	0	89	0	.	.	0	0	.	.	32	.	.	.	.	.0	0	0	0	0	0	0		0	0
	0	6	0	0	0	0	4	0	0		0	0	0	0	06	0	0	0	0	0	0		3	3
	8	E- 5	3	1	0	2	3	0	0		1	2	1	3		4	3	1	1	1	5		6	4
T Q 8	-	-	-	-	.	.	.	-	-	-	.	.	.	-	-	.	-	.	-	-	-	.0		.
	.	.0	.	.	0	0	0	.	.	.0	0	0	0	.	.0	0	.	0	.	.	.	36		0
	0	10	0	0	3	7	3	0	0	34	1	0	2	0	24	1	0	5	0	0	0		3	
	1 7		1	4	3	1	0	3	4		6	2	9	3	5		8	5	3	3	2		1	
C C 1	-	-	-	-	.	.	.	-	-	-	-	.	.	.	-	.	-	-	-	-	-	.0	.	
	.	.0	.	.	0	0	0	.	.	.0	.	0	.	0	.0	0	.	.	.	.	.	34	0	
	0	43	0	0	2	1	2	0	0	24	0	2	0	1	25	5	0	0	0	0	0		3	
	0 6		0	1	9	0	3	3	0		0	5	0	0		7	4	1	2	0	4		1	
C C 2	.	.0	.	-	.	.	-	-	.	-	-	-	.	-	.0	.	-	.	-	.	-	-	.	
	0	09	0	.	0	0	.	.	0	.0	.	.	0	.	13	0	.	0	.	0	.	.0	0	
	0		1	0	0	0	0	0	2	27	0	0	0	0		0	0	1	0	1	0	43	1	
	5		1	0	6	4	2	0	6		1	0	0	1		4	2	7	0	1	0		0	
C C 3	-	.0	-	-	.	.	.	.	.	.0	-	-	.	.	-	-	.	.	-	-	-	.0	.	
	.	16	.	.	0	0	0	0	0	04	.	.	0	0	.0	.	0	0	.	.	.	17	0	
	0		0	0	3	1	1	3	0		0	0	0	0	10	0	0	1	0	0	0		3	
	1 5		2	4	2	0	5	7	7		1	0	3	6		7	8	1	5	3	1		2	
C C 4	.	.0	.	.	.	.	-	.	-	.0	.	-	-	.	-	.	.	-	-	-	-	.0	.	
	0	08	0	0	0	0	.	0	.	27	0	.	.	0	.0	0	0	.	.	.	.	27	0	
	0		0	3	0	0	0	2	0		0	0	0	2	59	1	1	0	0	0	0		3	
	2		1	5	5	2	1	0	5		2	0	3	9		0	4	2	1	1	1		4	
M T1	.	.0	-	.	-	.	-	-	.	.0	-	-	.	-	-	.	.	.	.	-	.	.0	-	
	0	07	.	0	.	0	.	.	0	06	.	.	0	.	.0	.	0	0	0	.	0	18	.	
	3		0	5	0	2	0	0	4		0	0	0	0	08	0	3	0	7	0	2		0	
	6		4	5	4	9	7	1	3		0	0	6	0		3	5	4	0	1	8		0	

M T2	.	.0	-	.	.	.	-	-	-	-	.	.	-	-	-	.	-	.	.	.	-	-	.	.
	0	04	.	0	0	0	.	.	.	.0	0	0	.	.	.0	0	.	0	0	0	.	.0	0	0
	0	4	0	1	2	3	0	0	0	06	0	1	0	0	35	5	6	3	5	3	5	2	16	0
			9	4	0	0	1	1	1		3	2	1	5	7			2			7		9	6
M T3	.	.0	.	-	-	-	.	-	-	-	.	-	-	-	.0	-	.	.	-	.	-	-	-	.
	0	01	0	.	.	.	0	.	.	.0	.	0	.	.	02	.	0	0	.	0	.	.0	.	.
	4	8	7	0	0	0	2	0	0	12	0	0	0	0		0	7	2	0	1	0	19	0	0
			9	0	2	2	0	4	1		0	4	1	2		1	0	5	6	2	1		2	3
				7	4	6		1	5		3		6	8		3			8		2		0	4
M T4	-	.0	-	-	.	-	.	.	-	-	.	-	.	.	.0	-	-	.	-	-	-	-	-	-
	.	16	.	.	0	.	0	0	.	.0	0	.	0	0	68	.	.	0	.	.	.	.0	0	.
	0		0	0	4	0	1	4	0	05	1	0	2	3		0	0	2	0	0	0	19	8	0
			1	2	1	2	4	9	4		1	1	3	0		1	3	8	4	1	1		4	2
	5		5	7		8			7		0					7	0		1	0	3		2	
M T5	-	-	-	-	.	-	.	.	.	.0	.	.	.	.	.0	.	-	-	.	-	.	-	-	.
	.	.0	.	.	0	.	0	0	0	18	0	0	0	0	34	0	.	.	0	.	0	.0	.	0
	0	50	0	0	0	0	5	4	2		2	2	3	6		1	0	0	5	0	3	11	0	1
			3	2	4	1	9	3	4		6	1	4	4		3	0	5	5	0	2		2	1
	7		3	7		5											8	0		6		4		
S R 1	.	-	.	.	.	.	-	-	.	-	.	.	-	.	-	.	.	.	-	-	-	-	.	.
	0	.0	0	0	0	0	.	.	0	.0	0	0	.	0	.0	0	0	0	.	.	.	.0	0	0
	1	03	1	2	0	0	0	0	0	08	0	1	0	1	43	1	0	3	0	0	0	27	0	2
			1	0	7	7	1	2	1		0	1	2	1		5	1	5	2	1	1		5	2
						0	1						1						4	6	0			
S R 2	.	.0	.	-	-	.	-	.	-	-	.	.	-	-	-	.	-	-	-	.	-	.0	.	-
	0	32	0	.	.	0	.	0	.	.0	.	.	.	.	.0	0	.	.	.	0	.	19	0	.
	1		0	0	0	0	0	2	0	07	0	0	0	0	24	0	0	0	0	0	0		1	0
			4	0	0	3	1	1	0		0	0	1	1		8	0	0	0	0	1		1	0
				5	9		0		3		7	4	0	8			5	6	6		7			4
S R 3	.	.0	.	.	-	.	-	-	-	-	.	.	-	-	-	.	-	.	-	-	-	.0	.	-
	0	05	0	0	.	0	.	.	.	.0	.	.	.	.	.0	0	.	0	.	.	.	02	0	.
	2		3	0	0	2	0	0	0	07	0	0	0	0	10	1	0	0	0	0	0		3	0
			0	5	0	2	1	2	1		0	0	1	5		6	1	6	2	1	2		8	1
					7		1	1	2		4	8	5	1			3		3	5	3			2

S R 4	. 0 2 7	.0 22	. 0 1 7	. 0 1 5	. 0 1 1	- .0 0 7	- .0 0 7	- .0 0 7	- .0 0 5	- .0 01	- .0 1 2	- .0 1 0	- .0 0 5	- .0 0 2	- .0 09	- .0 0 3	. 0 1 6	. 0 2 0	- .0 0 2	- .0 0 6	- .0 0 1	.0 18	- .0 0 5	. 0 0 2
S R 5	- .0 0 2 5	.0 04	- .0 0 5	- .0 0 2	. 0 3 7	. 0 4 2	. 0 0 5	- .0 0 6	- .0 0 0	.0 10	. 0 0 4	. 0 0 2	- .0 0 7	. 0 0 9	- .0 16	- .0 1 2	- .0 0 2	- .0 0 2	- .0 0 1	- .0 0 1	- .0 0 1	.0 23	. 0 2 7	. 0 5 1
C O L1	- .0 0 6	.0 35	. 0 1 1	- .0 0 8	- .0 0 2	. 0 3 4	. 0 0 3	- .0 0 3	- .0 0 7	- .0 01	- .0 0 8	. 0 0 1	. 0 0 8	. 0 0 2	- .0 50	- .0 0 5	- .0 0 2	. 0 0 4	. 0 0 6	. 0 3 5	- .0 1 3	.0 42	- .0 0 6	- .0 0 9
C O L2	. 0 0 9	.0 19	. 0 3 3	- .0 0 4	- .0 0 1	. 0 2 2	. 0 0 3	. 0 0 5	- .0 0 7	- .0 23	. 0 1 1	. 0 0 6	. 0 0 0	- .0 3	.0 34	. 0 0 1	- .0 2	. 0 0 9	. 0 0 6	. 0 2 3	- .0 0 2	- .0 19	. 0 1 1	- .0 3
IN T E R 1	. 0 0 1	- .0 12	. 0 0 9	. 0 4 1	- .0 0 2	- .0 0 6	- .0 0 6	- .0 0 8	. 0 0 7	.0 05	- .0 0 1	- .0 0 0	- .0 0 8	- .0 0 7	.0 39	- .0 0 4	- .0 0 4	- .0 0 2	. 0 0 4	. 0 0 5	. 0 0 2	.0 50	. 0 1 0	- .0 0 1
IN T E R 2	. 0 4 1	- .0 27	- .0 1 3	. 0 0 2	. 0 1 4	- .0 0 4	. 0 3 6	. 0 2 7	- .0 0 9	- .0 21	- .0 1 1	- .0 0 8	. 0 0 2	- .0 2	.0 16	- .0 1 0	. 0 6 7	- .0 1 7	. 0 0 7	. 0 0 7	. 0 1 6	- .0 19	. 0 7 7	. 0 0 7
IN T E R 3	. 0 1 4	.0 05	- .0 0 1	. 0 0 7	- .0 0 1	- .0 0 4	. 0 0 7	. 0 2 7	. 0 0 4	- .0 05	- .0 0 1	- .0 0 1	- .0 0 0	- .0 0 1	.0 13	- .0 0 3	. 0 4 6	- .0 0 2	- .0 0 1	. 0 0 7	. 0 0 8	.0 07	- .0 4 3	. 0 0 2

Q A1	-	.0	.	-	.	.	-	-	-	.0	.	-	.	-	.0	-	-	.	.	.	-	-	.	-
	.10	0	.	0	0	.	.	.	.	41	0	.	0	.	54	.	.	0	0	0	.	.0	0	.
	0		0	0	1	2	0	0	0		1	0	1	0		0	0	2	5	0	0	14	4	0
	6		0	1	2	0	0	1	4		6	0	1	0		0	5	4	5	6	0		9	0
	5			3				1	5	6			4	4		4	4				5			7
Q A2	.	-	.	-	.	.	-	-	.	-	-	.	.	-	.0	.	.	-	.	-	.	.0	-	-
	0	.0	0	.	0	0	.	.	0	.0	.	0	0	.	06	0	0	.	0	.	0	11	.	.
	0	16	1	0	0	0	0	0	2	02	0	0	0	0		0	6	0	0	0	0		0	0
	3		4	1	8	4	0	1	4		1	6	9	1		7	2	4	1	0	6		0	1
				2			1	8			4			1				1		3			1	8
Q 13	.	-	-	.	-	.	.	-	.	-	.	.	.	-	.0	-	-	.	-	.	.	-	-	.
	0	.0	.	0	.	0	0	.	0	.0	0	0	0	.	22	.	.	0	.	0	0	.0	.	0
	0	40	0	3	0	0	0	0	1	09	1	0	1	0		0	0	7	0	0	1	14	0	2
	8		0	4	1	5	6	1	4		7	5	8	2		4	5	1	1	2	6		1	6
			6		5			7						6		4	2		1				5	
UI 1	.	-	-	.	-	-	.	-	.	.0	-	-	-	.	-	.	.	-	-	-	-	.0	-	.
	0	.0	.	0	.	.	0	.	0	03	.	.	.	0	.0	0	0	.	.	.	.	32	.	0
	1	25	0	2	0	0	5	0	0		0	0	0	0	67	3	4	0	0	0	0		0	0
	5		0	9	1	2	6	0	9		0	1	0	7		5	4	4	0	1	1		3	4
			2		7	2		2			3	9	2					8	5	5	8		0	
UI 2	.	.0	-	-	.	-	-	.	-	.0	.	.	-	.	-	.	.	-	-	.	-	-	.	.
	0	18	.	.	0	.	.	0	.	07	0	0	.	0	8.	0	0	.	.	0	.	.0	0	0
	0		0	0	0	0	0	2	0		0	0	0	2	67	0	1	0	0	1	0	11	1	0
	6		0	0	9	0	0	6	4		7	1	2	5	0	6	1	1	4	2	1		5	6
			6	7		5	2		3				1		E-5			1	4		7			
UI 3	-	.0	-	.	.	-	-	-	.	-	.	.	-	.	-	.	.	-	-	-	.	-	-	.
	.	00	.	0	0	.	.	.	0	.0	0	0	.	0	.0	0	0	.	.	.	0	.0	.	0
	0		0	0	3	0	0	0	3	06	0	0	0	2	26	1	1	0	0	0	0	09	0	4
	0		3	3	7	0	1	0	0		0	2	3	4		0	2	1	2	1	3		0	2
	2		3			4	3	1					0					7	3	4		8		

Pattern Matrix^a

Factor

1	2	3	4	5	6	7	8	9	10

SSS2	.867									
SSS1	.816									
SSS3	.785									
INF3	.651									
SSS4	.647									
INF1	.536									
INF2	.484									
FQ1	.406									
FQ2										
MT2		.782								
MT5		.655								
MT3		.647								
MT1		.622								
MT4		.537								
TQ6			.905							
TQ5			.847							
TQ7										
TQ8										
SR2				.882						
SR3				.864						
SR4				.809						
SR1				.748						
INTER 3				.590						
SR5				.589						
INTER 2				.475						
SSS5										

INTER 1										
QA2					-.884					
Q13					-.742					
UI3					-.635					
QA1					-.616					
UI2					-.607					
UI1					-.569					
TQ4						-.448				
FQ3										
TQ3							.641			
TQ1							.614			
TQ2							.450			
CC1										
COL1								-.514		
COL2								-.402		
CC4									.562	
CC2										
UA2										.793
UA4										.774
UA1										.770
UA3										.734
CC3										.415

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.^a

a. Rotation converged in 31 iterations.

Structure Matrix

	Factor									
	1	2	3	4	5	6	7	8	9	10
SSS2	.869									.432
SSS1	.826									
SSS3	.775									
INF3	.772									.490
INF2	.730				-.431					.469
INF1	.717									.467
SSS4	.680									
FQ2	.631				-.415		.516			
FQ1	.613				-.424		.434			
FQ3	.492					-.442				
MT2		.781								
MT5		.695								
MT4		.683			-.450		.430			
MT1		.653								
MT3		.644								
TQ7		.452	.422							
TQ6			.892							
TQ5			.870							
CC2			.465						.444	
TQ8			.409							
SR3				.922						.582
SR4				.921						.615
SR2				.916						.559

SR1				.868						.601
INTER 3	.413			.777						.568
SR5	.410			.707						.494
INTER 2				.707						.591
SSS5				.489						
INTER 1										
QA2					-.839					
Q13					-.757					
UI3		.401			-.729					
QA1					-.691					
UI2					-.657					
UI1					-.587					
COL2					-.510			-.406		
TQ4						-.517				
TQ3							.668			
TQ1	.403						.656			
TQ2							.530			
CC1							.461			
COL1								-.525		
CC4									.604	
UA2	.425			.639						.942
UA3	.463			.658						.913
UA1				.588						.891
UA4	.454			.557						.887
CC3				.403					.432	.526

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Factor Correlation Matrix

Factor	1	2	3	4	5	6	7	8	9	10
1	1.000	.315	.025	.349	-.368	-.155	.367	-.017	.062	.432
2	.315	1.000	-.023	-.108	-.450	-.026	.383	.007	.055	-.172
3	.025	-.023	1.000	-.066	-.106	-.157	.101	-.069	.202	.095
4	.349	-.108	-.066	1.000	-.074	-.160	.148	-.169	.078	.523
5	-.368	-.450	-.106	-.074	1.000	.065	-.379	.023	-.037	-.024
6	-.155	-.026	-.157	-.160	.065	1.000	-.147	-.015	-.074	-.105
7	.367	.383	.101	.148	-.379	-.147	1.000	-.028	.065	.125
8	-.017	.007	-.069	-.169	.023	-.015	-.028	1.000	-.037	-.071
9	.062	.055	.202	.078	-.037	-.074	.065	-.037	1.000	.064
10	.432	-.172	.095	.523	-.024	-.105	.125	-.071	.064	1.000

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Appendix L: Reliability Test for Extracted Factors – Quality of Medical Education

RELIABILITY

/VARIABLES=InfrastructureQ1 InfrastructureQ2 InfrastructureQ3 StudentServicesQ1
StudentServicesQ2

StudentServicesQ3 StudentServicesQ4 FacultyQualityQ1

/SCALE('FACTOR 1') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL MEANS CORR.

Reliability

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=InfrastructureQ1 InfrastructureQ2 InfrastructureQ3 StudentServicesQ1 StudentServicesQ2 StudentServicesQ3 StudentServicesQ4 FacultyQualityQ1 /SCALE('FACTOR 1') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS CORR.
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

[DataSet1] /Users/danah/Desktop/Thesis 2021/Survey/Results/SPSS Final sheet 28.7.20 (3).sav

Scale: FACTOR 1

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0
	Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.912	.912	8

Item Statistics

Mean	Std. Deviation	N

INF1	4.3865	.59838	251
INF2	4.4104	.59576	251
INF3	4.3745	.59598	251
SSS1	4.2430	.58026	251
SSS2	4.3625	.57274	251
SSS3	4.2709	.59187	251
SSS4	4.2869	.57740	251
FQ1	4.4462	.63253	251

Inter-Item Correlation Matrix

	INF1	INF2	INF3	SSS1	SSS2	SSS3	SSS4	FQ1
INF1	1.000	.765	.681	.581	.605	.483	.396	.525
INF2	.765	1.000	.681	.520	.606	.466	.447	.595
INF3	.681	.681	1.000	.638	.620	.573	.547	.446
SSS1	.581	.520	.638	1.000	.757	.658	.543	.423
SSS2	.605	.606	.620	.757	1.000	.724	.616	.479
SSS3	.483	.466	.573	.658	.724	1.000	.568	.456
SSS4	.396	.447	.547	.543	.616	.568	1.000	.437
FQ1	.525	.595	.446	.423	.479	.456	.437	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.348	4.243	4.446	.203	1.048	.005	8

Inter-Item Correlations	.565	.396	.765	.370	1.934	.010	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
INF1	30.3944	10.704	.731	.662	.899
INF2	30.3705	10.682	.741	.685	.898
INF3	30.4064	10.618	.760	.630	.896
SSS1	30.5378	10.754	.745	.641	.898
SSS2	30.4183	10.596	.804	.718	.893
SSS3	30.5100	10.827	.705	.587	.901
SSS4	30.4940	11.155	.631	.465	.907
FQ1	30.3347	11.024	.595	.417	.911

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
34.7809	13.924	3.73146	8

RELIABILITY

/VARIABLES=MedicalTrainingQ1 MedicalTrainingQ2 MedicalTrainingQ3
MedicalTrainingQ4

MedicalTrainingQ5

/SCALE('FACTOR 2') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL MEANS CORR.

Reliability

Notes

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	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.

Cases Used		Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY	
	/VARIABLES=MedicalTrainingQ1 MedicalTrainingQ2 MedicalTrainingQ3 MedicalTrainingQ4	
	MedicalTrainingQ5	
	/SCALE('FACTOR 2') ALL	
	/MODEL=ALPHA	
	/STATISTICS=DESCRIPTIVE SCALE CORR	
	/SUMMARY=TOTAL MEANS CORR.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: FACTOR 2

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0

Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.814	.820	5

Item Statistics

	Mean	Std. Deviation	N
MT1	4.4462	.63253	251
MT2	4.5378	.55997	251
MT3	4.3745	.66572	251
MT4	4.6215	.55514	251
MT5	4.6653	.52111	251

Inter-Item Correlation Matrix

	MT1	MT2	MT3	MT4	MT5
MT1	1.000	.505	.371	.437	.479
MT2	.505	1.000	.584	.490	.510
MT3	.371	.584	1.000	.407	.386

MT4	.437	.490	.407	1.000	.597
MT5	.479	.510	.386	.597	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.529	4.375	4.665	.291	1.066	.014	5
Inter-Item Correlations	.477	.371	.597	.226	1.610	.006	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MT1	18.1992	3.288	.564	.336	.791
MT2	18.1076	3.272	.689	.489	.754
MT3	18.2709	3.222	.551	.364	.798
MT4	18.0239	3.415	.613	.423	.776
MT5	17.9801	3.484	.631	.446	.773

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
22.6454	4.982	2.23199	5

RELIABILITY

```
/VARIABLES=ScientificResearchQ1 ScientificResearchQ2 ScientificResearchQ3  
ScientificResearchQ4
```

```
ScientificResearchQ5 InteractionWithCommunityQ2 InteractionWithCommunityQ3
```

```
/SCALE('FACTOR 3') ALL
```

```
/MODEL=ALPHA
```

```
/STATISTICS=DESCRIPTIVE SCALE CORR
```

```
/SUMMARY=TOTAL MEANS CORR.
```

Reliability

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=ScientificResearchQ1 ScientificResearchQ2 ScientificResearchQ3 ScientificResearchQ4 ScientificResearchQ5 InteractionWithCommunityQ2 InteractionWithCommunityQ3 /SCALE('FACTOR 3') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS CORR.	
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Scale: FACTOR 3

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0
	Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.949	.949	7

Item Statistics

	Mean	Std. Deviation	N
SR1	3.9283	.90931	251
SR2	3.9482	.93022	251
SR3	3.9801	.93145	251

SR4	4.0398	.94149	251
SR5	4.2510	.78278	251
INTER2	3.8486	.95131	251
INTER3	3.8924	.97179	251

Inter-Item Correlation Matrix

	SR1	SR2	SR3	SR4	SR5	INTER2	INTER3
SR1	1.000	.861	.872	.849	.627	.663	.666
SR2	.861	1.000	.899	.870	.650	.610	.689
SR3	.872	.899	1.000	.913	.671	.665	.718
SR4	.849	.870	.913	1.000	.714	.695	.748
SR5	.627	.650	.671	.714	1.000	.540	.593
INTER2	.663	.610	.665	.695	.540	1.000	.783
INTER3	.666	.689	.718	.748	.593	.783	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.984	3.849	4.251	.402	1.105	.018	7
Inter-Item Correlations	.728	.540	.913	.373	1.691	.012	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SR1	23.9602	23.310	.866	.808	.938
SR2	23.9402	23.064	.874	.844	.938
SR3	23.9084	22.780	.910	.888	.934
SR4	23.8486	22.609	.921	.875	.933
SR5	23.6375	25.552	.704	.520	.951
INTER2	24.0398	23.934	.741	.659	.949
INTER3	23.9960	23.356	.792	.704	.945

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
27.8884	31.740	5.63378	7

RELIABILITY

```

/VARIABLES=QualityAssuranceAccreditationQ1 QualityAssuranceAccreditationQ2
QualityAssuranceAccreditationQ3 UniversityImageQ1 UniversityImageQ2
UniversityImageQ3
/SCALE('FACTOR 4') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL MEANS CORR.

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Reliability

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.

Syntax		RELIABILITY /VARIABLES=QualityAssuranceAccreditationQ1 QualityAssuranceAccreditationQ2 QualityAssuranceAccreditationQ3 UniversityImageQ1 UniversityImageQ2 UniversityImageQ3 /SCALE('FACTOR 4') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS CORR.
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Scale: FACTOR 4

Case Processing Summary

		N	%
Cases	Valid	251	100.0

Excluded ^a	0	.0
Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.853	.857	6

Item Statistics

	Mean	Std. Deviation	N
QA1	4.3865	.54227	251
QA2	4.4024	.53799	251
Q13	4.4343	.54283	251
UI1	4.2948	.63932	251
UI2	4.3068	.61767	251
UI3	4.4024	.53799	251

Inter-Item Correlation Matrix

	QA1	QA2	Q13	UI1	UI2	UI3
QA1	1.000	.617	.637	.282	.373	.493

QA2	.617	1.000	.673	.526	.458	.544
Q13	.637	.673	1.000	.344	.436	.509
UI1	.282	.526	.344	1.000	.499	.526
UI2	.373	.458	.436	.499	1.000	.578
UI3	.493	.544	.509	.526	.578	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.371	4.295	4.434	.139	1.032	.003	6
Inter-Item Correlations	.500	.282	.673	.392	2.391	.011	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
QA1	21.8406	5.007	.605	.494	.835
QA2	21.8247	4.745	.740	.602	.810
Q13	21.7928	4.877	.666	.551	.824
UI1	21.9323	4.807	.554	.413	.847
UI2	21.9203	4.762	.603	.408	.836
UI3	21.8247	4.833	.696	.497	.819

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
26.2271	6.768	2.60158	6

RELIABILITY

/VARIABLES=TeachingQualityQ1 TeachingQualityQ2 TeachingQualityQ3

/SCALE('FACTOR 5') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL MEANS CORR.

Reliability

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=TeachingQualityQ1 TeachingQualityQ2 TeachingQualityQ3 /SCALE('FACTOR 5') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS CORR.
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Scale: FACTOR 5

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0
	Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.653	.653	3

Item Statistics

	Mean	Std. Deviation	N
TQ1	4.4422	.63847	251
TQ2	4.2669	.60371	251
TQ3	4.3267	.58382	251

Inter-Item Correlation Matrix

TQ1	TQ2	TQ3

TQ1	1.000	.409	.405
TQ2	.409	1.000	.342
TQ3	.405	.342	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.345	4.267	4.442	.175	1.041	.008	3
Inter-Item Correlations	.385	.342	.409	.067	1.196	.001	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
TQ1	8.5936	.946	.497	.247	.509
TQ2	8.7689	1.050	.449	.204	.575
TQ3	8.7092	1.087	.446	.201	.579

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
13.0359	1.971	1.40382	3

RELIABILITY

```

/VARIABLES=CoursesCurriculumQ3 UniversityAdministrationQ1
UniversityAdministrationQ2
UniversityAdministrationQ3 UniversityAdministrationQ4
/SCALE('FACTOR 6') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE CORR
/SUMMARY=TOTAL MEANS CORR.

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Reliability

Notes

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Matrix Input		
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=CoursesCurriculumQ3 UniversityAdministrationQ1 UniversityAdministrationQ2 UniversityAdministrationQ3 UniversityAdministrationQ4 /SCALE('FACTOR 6') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS CORR.
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Scale: FACTOR 6

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0
	Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.929	.927	5

Item Statistics

	Mean	Std. Deviation	N
CC3	3.3586	1.08024	251
UA1	3.7649	1.20852	251
UA2	3.8765	1.21519	251
UA3	3.8167	1.22567	251
UA4	3.9641	1.13609	251

Inter-Item Correlation Matrix

	CC3	UA1	UA2	UA3	UA4
CC3	1.000	.509	.485	.488	.490
UA1	.509	1.000	.906	.862	.807
UA2	.485	.906	1.000	.925	.863
UA3	.488	.862	.925	1.000	.837
UA4	.490	.807	.863	.837	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.756	3.359	3.964	.606	1.180	.055	5
Inter-Item Correlations	.717	.485	.925	.440	1.907	.036	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CC3	15.4223	20.629	.519	.281	.963
UA1	15.0159	16.672	.888	.831	.899
UA2	14.9044	16.343	.923	.912	.891
UA3	14.9641	16.459	.898	.864	.896
UA4	14.8167	17.470	.856	.761	.905

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
18.7809	26.892	5.18573	5

Appendix M: Exploratory Factor Analysis – Quality of Medical Graduates

FACTOR

/VARIABLES GRADQualificationCompetencyQ1 GRADQualificationCompetencyQ2

GRADQualificationCompetencyQ3 GRADQualificationCompetencyQ4
GRADQualificationCompetencyQ5

GRADQualificationCompetencyQ6 GRADQualificationCompetencyQ7
GRADQualificationCompetencyQ8

GRADQualificationCompetencyQ9 GRADQualificationCompetencyQ10
GRADEmploymentReadinessQ1

GRADEmploymentReadinessQ2 GRADEmploymentReadinessQ3
GRADEmploymentReadinessQ4

GRADEmploymentReadinessQ5

/MISSING LISTWISE

/ANALYSIS GRADQualificationCompetencyQ1 GRADQualificationCompetencyQ2

GRADQualificationCompetencyQ3 GRADQualificationCompetencyQ4
GRADQualificationCompetencyQ5

GRADQualificationCompetencyQ6 GRADQualificationCompetencyQ7
GRADQualificationCompetencyQ8

GRADQualificationCompetencyQ9 GRADQualificationCompetencyQ10
GRADEmploymentReadinessQ1

GRADEmploymentReadinessQ2 GRADEmploymentReadinessQ3
GRADEmploymentReadinessQ4

GRADEmploymentReadinessQ5

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ROTATION

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----- FACTOR ANALYSIS -----
-----

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Factor Analysis

Notes

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	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.

Syntax	FACTOR /VARIABLES GRADQualificationCompetencyQ1 GRADQualificationCompetencyQ2 GRADQualificationCompetencyQ3 GRADQualificationCompetencyQ4 GRADQualificationCompetencyQ5 GRADQualificationCompetencyQ6 GRADQualificationCompetencyQ7 GRADQualificationCompetencyQ8 GRADQualificationCompetencyQ9 GRADQualificationCompetencyQ10 GRADEmploymentReadinessQ1 GRADEmploymentReadinessQ2 GRADEmploymentReadinessQ3 GRADEmploymentReadinessQ4 GRADEmploymentReadinessQ5 /MISSING LISTWISE

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	GRADQualificationCompetencyQ3
	GRADQualificationCompetencyQ4
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	GRADQualificationCompetencyQ6
	GRADQualificationCompetencyQ7
	GRADQualificationCompetencyQ8
	GRADQualificationCompetencyQ9
	GRADQualificationCompetencyQ10
	GRADEmploymentReadinessQ1
	GRADEmploymentReadinessQ2
	GRADEmploymentReadinessQ3
	GRADEmploymentReadinessQ4
	GRADEmploymentReadinessQ5
	/PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO INV REPR

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	FAC2_53	Regression factor score 2
	FAC3_53	Regression factor score 3
	FAC4_53	Regression factor score 4

[DataSet1] /Users/danah/Desktop/Thesis May 2021/Survey/Results/SPSS Final sheet 28.7.20 (3).sav

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
GRADQC1	4.4542	.55217	251
GRADQC2	4.5657	.54283	251
GRADQC3	4.3187	.56036	251
GRADQC4	3.9243	.74716	251
GRADQC5	3.7450	.94590	251
GRADQC6	3.6494	.93626	251
GRADQC7	4.2191	.66618	251
GRADQC8	4.1793	.58286	251
GRADQC9	3.8526	.97477	251
GRADQC10	4.0438	.84028	251
GRADER1	4.1355	.58445	251
GRADER2	4.2351	.54086	251
GRADER3	4.1235	.67282	251
GRADER4	4.2470	.58885	251
GRADER5	4.3068	.66145	251

Correlation Matrix^a

		GRAD QC1	GRAD QC2	GRAD QC3	GRAD QC4	GRAD QC5	GRAD QC6	GRAD QC7
Correla tion	GRADQ C1	1.000	.701	.371	.132	-.107	-.085	.098
	GRADQ C2	.701	1.000	.457	.096	.017	-.025	.154
	GRADQ C3	.371	.457	1.000	.316	.184	.252	.273
	GRADQ C4	.132	.096	.316	1.000	.352	.414	.138

	GRADQ C5	-.107	.017	.184	.352	1.000	.775	.400
	GRADQ C6	-.085	-.025	.252	.414	.775	1.000	.393
	GRADQ C7	.098	.154	.273	.138	.400	.393	1.000
	GRADQ C8	.218	.222	.228	.187	.243	.343	.661
	GRADQ C9	-.105	-.069	.167	.248	.749	.697	.444
	GRADQ C10	.190	.200	.149	.305	.165	.213	.390
	GRADE R1	.304	.174	.258	.243	.055	.182	.232
	GRADE R2	.190	.199	.227	.094	.149	.163	.278
	GRADE R3	.182	.180	.288	.297	.238	.342	.189
	GRADE R4	.146	.249	.197	.206	.293	.296	.300
	GRADE R5	.132	.228	.275	.128	.253	.310	.264
Sig. (1-tailed)	GRADQ C1		.000	.000	.018	.046	.089	.061
	GRADQ C2	.000		.000	.064	.393	.345	.007
	GRADQ C3	.000	.000		.000	.002	.000	.000
	GRADQ C4	.018	.064	.000		.000	.000	.014
	GRADQ C5	.046	.393	.002	.000		.000	.000
	GRADQ C6	.089	.345	.000	.000	.000		.000

GRADQ C7	.061	.007	.000	.014	.000	.000	
GRADQ C8	.000	.000	.000	.001	.000	.000	.000
GRADQ C9	.048	.140	.004	.000	.000	.000	.000
GRADQ C10	.001	.001	.009	.000	.004	.000	.000
GRADE R1	.000	.003	.000	.000	.191	.002	.000
GRADE R2	.001	.001	.000	.069	.009	.005	.000
GRADE R3	.002	.002	.000	.000	.000	.000	.001
GRADE R4	.010	.000	.001	.001	.000	.000	.000
GRADE R5	.019	.000	.000	.021	.000	.000	.000

Inverse of Correlation Matrix

	GRAD QC1	GRAD QC2	GRAD QC3	GRAD QC4	GRAD QC5	GRAD QC6	GRAD QC7	GRAD QC8
GRADQ C1	2.276	-1.475	-.111	-.130	.247	.183	.135	-.232
GRADQ C2	-1.475	2.449	-.621	.202	-.531	.211	.023	-.088
GRADQ C3	-.111	-.621	1.619	-.391	.221	-.245	-.367	.180
GRADQ C4	-.130	.202	-.391	1.558	-.439	-.357	.320	-.114
GRADQ C5	.247	-.531	.221	-.439	3.652	-1.724	-.498	.405

GRADQ C6	.183	.211	-.245	-.357	-1.724	3.326	.109	-.467
GRADQ C7	.135	.023	-.367	.320	-.498	.109	2.244	-1.205
GRADQ C8	-.232	-.088	.180	-.114	.405	-.467	-1.205	2.104
GRADQ C9	-.100	.461	-.113	.254	-1.452	-.727	-.261	.028
GRADQ C10	-.083	-.154	.185	-.448	.337	-.001	-.334	-.169
GRADE R1	-.448	.260	-.028	-.228	.408	-.205	-.184	.008
GRADE R2	.093	-.092	-.106	.232	-.112	.300	.037	-.188
GRADE R3	-.079	.088	-.162	-.187	.072	-.449	.148	.012
GRADE R4	.155	-.378	.361	-.154	-.238	.310	-.215	.065
GRADE R5	.085	-.028	-.336	.289	.048	-.275	.237	-.297

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.774
Bartlett's Test of Sphericity	Approx. Chi-Square	1736.952
	df	105
	Sig.	.000

Anti-image Matrices

		GRADQ C1	GRADQ C2	GRADQ C3	GRADQ C4	GRADQ C5	GRADQ C6
Anti- image Covarian ce	GRADQC 1	.439	-.265	-.030	-.037	.030	.024
	GRADQC 2	-.265	.408	-.157	.053	-.059	.026
	GRADQC 3	-.030	-.157	.618	-.155	.037	-.046
	GRADQC 4	-.037	.053	-.155	.642	-.077	-.069
	GRADQC 5	.030	-.059	.037	-.077	.274	-.142
	GRADQC 6	.024	.026	-.046	-.069	-.142	.301
	GRADQC 7	.026	.004	-.101	.092	-.061	.015
	GRADQC 8	-.048	-.017	.053	-.035	.053	-.067
	GRADQC 9	-.016	.066	-.025	.058	-.140	-.077
	GRADQC 10	-.025	-.043	.078	-.196	.063	.000

	GRADER 1	-.109	.059	-.010	-.081	.062	-.034
	GRADER 2	.024	-.022	-.038	.087	-.018	.053
	GRADER 3	-.017	.017	-.048	-.058	.009	-.065
	GRADER 4	.025	-.056	.081	-.036	-.024	.034
	GRADER 5	.017	-.005	-.093	.083	.006	-.037
Anti- image Correlati on	GRADQC 1	.666 ^a	-.625	-.058	-.069	.086	.066
	GRADQC 2	-.625	.629 ^a	-.312	.103	-.178	.074
	GRADQC 3	-.058	-.312	.765 ^a	-.246	.091	-.106
	GRADQC 4	-.069	.103	-.246	.708 ^a	-.184	-.157
	GRADQC 5	.086	-.178	.091	-.184	.740 ^a	-.495
	GRADQC 6	.066	.074	-.106	-.157	-.495	.816 ^a

GRADQC 7	.060	.010	-.193	.171	-.174	.040
GRADQC 8	-.106	-.039	.097	-.063	.146	-.177
GRADQC 9	-.039	.175	-.053	.121	-.451	-.237
GRADQC 10	-.045	-.081	.120	-.296	.145	.000
GRADER 1	-.221	.124	-.017	-.136	.159	-.084
GRADER 2	.047	-.045	-.063	.142	-.045	.125
GRADER 3	-.036	.039	-.088	-.104	.026	-.171
GRADER 4	.062	-.146	.172	-.074	-.075	.103
GRADER 5	.038	-.012	-.177	.155	.017	-.101

Communalities

	Initial	Extraction
GRADQC1	.561	.693
GRADQC2	.592	.667

GRADQC3	.382	.362
GRADQC4	.358	.236
GRADQC5	.726	.812
GRADQC6	.699	.784
GRADQC7	.554	.710
GRADQC8	.525	.622
GRADQC9	.647	.651
GRADQC10	.319	.265
GRADER1	.445	.372
GRADER2	.417	.405
GRADER3	.519	.627
GRADER4	.635	.627
GRADER5	.551	.464

Extraction Method: Principal Axis Factoring.

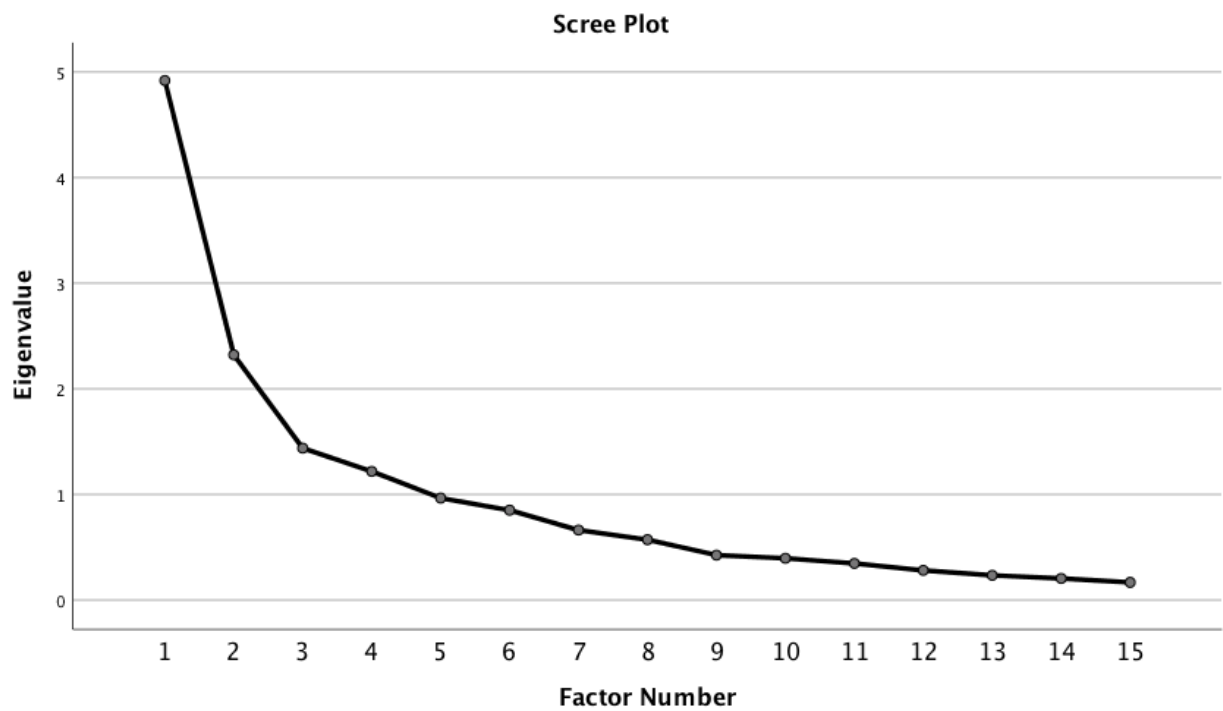
Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.919	32.794	32.794	4.496	29.971	29.971	3.495
2	2.321	15.477	48.270	1.998	13.321	43.292	2.208
3	1.438	9.586	57.856	1.014	6.760	50.052	3.134
4	1.218	8.120	65.976	.790	5.264	55.316	2.721

5	.965	6.435	72.412				
6	.851	5.671	78.082				
7	.662	4.415	82.497				
8	.572	3.810	86.307				
9	.425	2.836	89.143				
10	.395	2.634	91.777				
11	.347	2.312	94.089				
12	.281	1.875	95.964				
13	.234	1.559	97.523				
14	.205	1.364	98.887				
15	.167	1.113	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance



Factor Matrix^a

	Factor			
	1	2	3	4
GRADER4	.672			
GRADQC6	.669	-.523		
GRADQC7	.626			-.462
GRADER3	.624		-.427	
GRADQC8	.614			-.442
GRADQC5	.614	-.583		
GRADQC9	.611	-.518		
GRADER5	.604			
GRADER2	.530			
GRADER1	.494			
GRADQC10	.458			
GRADQC3	.457			
GRADQC4	.416			
GRADQC1		.678		
GRADQC2		.614		

Extraction Method: Principal Axis Factoring.^a

a. 4 factors extracted. 12 iterations required.

Reproduced Correlations

		GRAD QC1	GRAD QC2	GRAD QC3	GRAD QC4	GRAD QC5	GRAD QC6
Reproduced Correlation	GRAD QC1	.693 ^a	.676	.414	.143	-.112	-.084
	GRAD QC2	.676	.667 ^a	.432	.179	-.030	-.005
	GRAD QC3	.414	.432	.362 ^a	.239	.226	.245
	GRAD QC4	.143	.179	.239	.236 ^a	.368	.374
	GRAD QC5	-.112	-.030	.226	.368	.812 ^a	.792
	GRAD QC6	-.084	-.005	.245	.374	.792	.784 ^a
	GRAD QC7	.119	.156	.220	.187	.382	.405
	GRAD QC8	.209	.233	.245	.168	.264	.302
	GRAD QC9	-.134	-.063	.178	.308	.704	.700
	GRAD QC10	.183	.201	.208	.150	.207	.236

	GRADER1	.255	.262	.245	.164	.098	.157
	GRADER2	.194	.204	.217	.157	.125	.188
	GRADER3	.185	.208	.273	.250	.252	.320
	GRADER4	.155	.179	.255	.234	.258	.331
	GRADER5	.156	.178	.239	.214	.243	.304
Residual ^b	GRADQC1		.025	-.043	-.011	.005	-.001
	GRADQC2	.025		.024	-.083	.047	-.021
	GRADQC3	-.043	.024		.077	-.041	.007
	GRADQC4	-.011	-.083	.077		-.016	.040
	GRADQC5	.005	.047	-.041	-.016		-.017
	GRADQC6	-.001	-.021	.007	.040	-.017	

GRAD QC7	-.021	-.002	.053	-.049	.019	-.012
GRAD QC8	.009	-.011	-.016	.019	-.021	.041
GRAD QC9	.028	-.006	-.012	-.059	.045	-.003
GRAD QC10	.007	-.002	-.059	.155	-.042	-.023
GRAD ER1	.050	-.088	.014	.079	-.042	.025
GRAD ER2	-.004	-.005	.010	-.064	.024	-.025
GRAD ER3	-.002	-.028	.014	.047	-.014	.022
GRAD ER4	-.009	.070	-.058	-.028	.035	-.035
GRAD ER5	-.024	.049	.035	-.085	.010	.006

Pattern Matrix^a

	Factor			
	1	2	3	4
GRADER3	.809			

GRADER4	.788			
GRADER5	.638			
GRADER2	.586			
GRADER1	.561			
GRADQC1		.824		
GRADQC2		.813		
GRADQC3		.495		
GRADQC5			.906	
GRADQC6			.843	
GRADQC9			.691	
GRADQC4			.401	
GRADQC7				-.813
GRADQC8				-.737
GRADQC10				

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.^a

a. Rotation converged in 10 iterations.

Structure Matrix

	Factor			
	1	2	3	4
GRADER4	.787			
GRADER3	.773			
GRADER5	.675			
GRADER2	.619			

GRADER1	.595			
GRADQC1		.822		
GRADQC2		.814		
GRADQC3		.541		
GRADQC5			.898	
GRADQC6			.881	
GRADQC9			.774	-.447
GRADQC4			.428	
GRADQC7			.408	-.834
GRADQC8	.421			-.782
GRADQC10				-.483

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Factor Correlation Matrix

Factor	1	2	3	4
1	1.000	.381	.364	-.436
2	.381	1.000	.059	-.238
3	.364	.059	1.000	-.366
4	-.436	-.238	-.366	1.000

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Appendix N: Reliability Test for Extracted Factors – Quality of Medical Graduate

RELIABILITY

/VARIABLES=GRADEmploymentReadinessQ1 GRADEmploymentReadinessQ2
GRADEmploymentReadinessQ3

GRADEmploymentReadinessQ4 GRADEmploymentReadinessQ5

/SCALE('Factor 1') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL MEANS VARIANCE COV CORR.

Reliability

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=GRADEmploymentReadinessQ1 GRADEmploymentReadinessQ2 GRADEmploymentReadinessQ3 GRADEmploymentReadinessQ4 GRADEmploymentReadinessQ5 /SCALE('Factor 1') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE CORR /SUMMARY=TOTAL MEANS VARIANCE COV CORR.
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: Factor 1

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0
	Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.816	.817	5

Item Statistics

	Mean	Std. Deviation	N
GRADER1	4.1355	.58445	251
GRADER2	4.2351	.54086	251
GRADER3	4.1235	.67282	251

GRADER4	4.2470	.58885	251
GRADER5	4.3068	.66145	251

Inter-Item Correlation Matrix

	GRADER1	GRADER2	GRADER3	GRADER4	GRADER5
GRADER1	1.000	.532	.507	.356	.296
GRADER2	.532	1.000	.459	.432	.357
GRADER3	.507	.459	1.000	.599	.472
GRADER4	.356	.432	.599	1.000	.708
GRADER5	.296	.357	.472	.708	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.210	4.124	4.307	.183	1.044	.006	5
Item Variances	.374	.293	.453	.160	1.548	.005	5
Inter-Item Covariances	.176	.114	.276	.162	2.414	.003	5
Inter-Item Correlations	.472	.296	.708	.413	2.396	.014	5

Item-Total Statistics

Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted

GRADER1	16.9124	3.840	.527	.370	.802
GRADER2	16.8127	3.897	.562	.362	.793
GRADER3	16.9243	3.310	.664	.467	.762
GRADER4	16.8008	3.496	.702	.601	.752
GRADER5	16.7410	3.497	.588	.507	.787

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
21.0478	5.390	2.32157	5

RELIABILITY

/VARIABLES=GRADQualificationCompetencyQ1 GRADQualificationCompetencyQ2

GRADQualificationCompetencyQ3

/SCALE('Factor 2') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL MEANS VARIANCE COV CORR.

Reliability

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.

Syntax		RELIABILITY
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		GRADQualificationCompet encyQ3
		/SCALE('Factor 2') ALL
		/MODEL=ALPHA
		/STATISTICS=DESCRIPTI VE SCALE CORR
		/SUMMARY=TOTAL MEANS VARIANCE COV CORR.
Resources	Processor Time	00:00:00.01
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Scale: Factor 2

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0

Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.756	.757	3

Item Statistics

	Mean	Std. Deviation	N
GRADQC1	4.4542	.55217	251
GRADQC2	4.5657	.54283	251
GRADQC3	4.3187	.56036	251

Inter-Item Correlation Matrix

	GRADQC1	GRADQC2	GRADQC3
GRADQC1	1.000	.701	.371
GRADQC2	.701	1.000	.457
GRADQC3	.371	.457	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.446	4.319	4.566	.247	1.057	.015	3
Item Variances	.305	.295	.314	.019	1.066	.000	3
Inter-Item Covariances	.155	.115	.210	.095	1.832	.002	3
Inter-Item Correlations	.509	.371	.701	.330	1.891	.023	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
GRADQC1	8.8845	.887	.624	.494	.627
GRADQC2	8.7729	.848	.698	.536	.541
GRADQC3	9.0199	1.020	.448	.214	.824

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
13.3386	1.841	1.35678	3

RELIABILITY

```

/VARIABLES=GRADQualificationCompetencyQ4 GRADQualificationCompetencyQ5
GRADQualificationCompetencyQ6 GRADQualificationCompetencyQ9
/SCALE('Factor 3') ALL

```

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE SCALE CORR

/SUMMARY=TOTAL MEANS VARIANCE COV CORR.

Reliability

Notes

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Cases Used		Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY	
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Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: Factor 3

Case Processing Summary

		N	%
Cases	Valid	251	100.0
	Excluded ^a	0	.0
	Total	251	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.833	.824	4

Item Statistics

	Mean	Std. Deviation	N
GRADQC4	3.9243	.74716	251
GRADQC5	3.7450	.94590	251
GRADQC6	3.6494	.93626	251
GRADQC9	3.8526	.97477	251

Inter-Item Correlation Matrix

	GRADQC4	GRADQC5	GRADQC6	GRADQC9
GRADQC4	1.000	.352	.414	.248

GRADQC5	.352	1.000	.775	.749
GRADQC6	.414	.775	1.000	.697
GRADQC9	.248	.749	.697	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.793	3.649	3.924	.275	1.075	.015	4
Item Variances	.820	.558	.950	.392	1.702	.031	4
Inter-Item Covariances	.455	.181	.690	.509	3.818	.052	4
Inter-Item Correlations	.539	.248	.775	.527	3.122	.047	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
GRADQC4	11.2470	6.747	.370	.181	.895
GRADQC5	11.4263	4.598	.801	.688	.722
GRADQC6	11.5219	4.643	.799	.656	.724
GRADQC9	11.3187	4.778	.707	.598	.769

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
15.1713	8.743	2.95678	4