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Post Merger and Acquisition Innovation and Performance: Implications from Structural Choices and Knowledge-Based Theory

By Hanna Lee

A Thesis Submitted for the Degree of Doctor of Philosophy
Durham University Business School
Durham University
2016

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ABSTRACT

This study addresses the research question of how the post-acquisition structures of structural integration and autonomy affect Merger and Acquisition (M&A) performance and New Product Development (NPD) performance within knowledge-based theory. Achieving the following research objectives: (1) to provide explanations about the roles of exploitation innovation and exploration innovation in the relationships between structural integration and autonomy and M&A and NPD performance; and (2) to examine the roles of knowledge transfer and knowledge sharing in the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation, this study provides innovation-based explanations about a post-acquisition mechanism of M&A success and knowledge-based explanations about post-acquisition innovation. Therefore, this study contributes to existing literature on post-acquisition innovation and cross-border M&As within knowledge-based theory.

This study adopted quantitative methodology and a survey method to make generalisation about findings from samples to a population and achieve primary data on acquiring firms' behaviour and attitudes towards their most recent cross-border M&A, which would not be available as secondary data. Designing a survey in an online-format, a cross-sectional form, and a closed-question format, this study conducted rigorous data analysis and enhanced the variation and generalisability of research findings.

In order to confirm the accuracy of survey measures and statements, the survey was pilot tested in April 2015 by six academics whose work was cited in the survey questions and an academic at Durham University Business School who had reviewed my progression of PhD study. Sending a pre-notification one week before sending a survey link, a data-collection process started in June 2015. Subsequently, sending two reminders at two intervals of two weeks, the data collection finished in December 2015. Therefore, the whole data-collection process from conducting the pilot study to sending the survey link and two survey reminders occurred between April 2015 and December 2015.

The survey targeted those UK acquiring firms who purchased a non-UK acquired firm between January 2012 and July 2015 with a 100% full equity stake. Moreover, the survey was sent to the senior-level managers of the UK acquiring firms, who were the most knowledgeable informants about post-acquisition implementation and M&A outcomes. While data collection started in late June 2015, I added into the full survey any company that had completed a cross-border M&A by the end of June 2015 (i.e., the start of July 2015). They were

added into the data collection effort in July 2015 as part of the final sample. Therefore, as a result of survey invitations to 593 firms, I received total 143 responses, which represented a response rate of 24.1%. The survey data collected was tested using regression and with the PROCESS macro in SPSS for further examining indirect (mediation) effects.

It was observed that structural integration affected M&A and NPD performance via exploitation innovation and affected exploitation innovation via knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing. On the other hand, there was no evidence of autonomy as a determinant of M&A and NPD performance. Specifically, it was found that autonomy affected neither M&A performance nor NPD performance via the mediating variable of exploration innovation. Moreover, autonomy affected exploration innovation via neither knowledge transfer nor knowledge sharing. No direct effects of autonomy on M&A and NPD performance were discovered either.

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Chapter 1: Introduction

1. Introduction

The liberalisation of national financial and capital markets and the increasing integration of national economies have led to cross-border Mergers and Acquisitions (M&As) to be the most popular mode of corporate growth and international expansion (Uddin & Boateng, 2009). The popularity of cross-border M&As is reported by the United Nations Conference on Trade and Development (UNCTAD) (2015). According to their data, cross-border M&A deals have shown sharp rises from US \$98 billion and 3,442 deals in 1990 to US \$399 billion and 9,696 deals in 2014. In spite of this substantial growth and the popularity of cross-border M&As, it is reported that the ratio of successful M&A performance is disappointing. Only around four out of ten M&A events produce successful outcomes, and the rest fail to achieve their original purposes (Child et al., 1999; Schoenberg, 2006). Such high risks of M&As have drawn scholarly attention to a post-acquisition process in which an acquiring and acquired firm structure their operations and produce M&A outcomes (Datta & Grant, 1990; Grimpe, 2007). Specifically, previous literature attributes M&A success to an acquiring firm's decision to structurally integrate an acquired firm (i.e., structural integration) (Grimpe, 2007; Saxton & Dollinger, 2004) and grant autonomy to an acquired firm (i.e., autonomy) (Datta & Grant, 1990; Very et al., 1997). However, our understanding of how the post-acquisition structures of structural integration and autonomy affect M&A outcomes is limited.

In seeking to improve the understanding of the roles of structural integration and autonomy in leading to M&A outcomes, this study argues that without considering post-acquisition innovation, our understanding of M&A outcomes arising from structural integration and autonomy is limited. Moreover, without considering the knowledge-based commitment of an acquiring and acquired firm to post-acquisition innovation (Bauer et al., 2016), our understanding of post-acquisition innovation arising from structural integration and autonomy is limited. Therefore, this study argues that structural integration and autonomy produce M&A outcomes not directly (Cording et al., 2008) but via post-acquisition innovation. To this end, the knowledge-transfer activities and knowledge-sharing capabilities of an acquiring and acquired firm translate into post-acquisition innovation from structural integration and autonomy. In other words, this study provides innovation-based explanations about a post-acquisition mechanism of M&A success and knowledge-based explanations about post-acquisition innovation. Thus, this study answers the question of how structural integration and autonomy affect post-acquisition innovation and then M&A outcomes within knowledge-based theory.

1.1. Research Context

The popularity and prosperity of recent cross-border M&As are significantly driven by firms from developed countries. Their entry into foreign markets by cross-border M&As reached 7,254 M&A deals in 2014, 75% of the global share. In contrast, the number of cross-border M&A purchased by firms in developing countries amounted to 1,693, 23% of the developed countries' share and 18% of the global share. Table 1.1 describes the value and number of cross-border M&As purchased by firms from developing and developed countries.

Table 1. 1 Values and Number of Cross-Border M&A Purchases and Sales

	Region/Economy	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014
Value of Cross-Border M&A Purchases* (Billions of US Dollars)	World	98	960	1,033	618	288	347	553	328	313	399
	Developed Economies	85	895	868	480	191	225	432	184	179	228
	Developing Economies	8	61	137	114	80	100	101	124	120	152
Number of Cross-Border M&A Purchases	World	3,442	10,517	12,044	11,106	8,691	9,938	10,187	9,630	8,487	9,696
	Developed Economies	2,970	9,292	9,709	8,594	6,227	7,246	7,663	7,087	6,261	7,254
	Developing Economies	169	923	1,740	1,758	1,502	1,843	1,790	1,780	1,524	1,693

Note. * The value of cross-border M&A purchases is calculated on a net basis as follows: Purchases of firms abroad by acquiring firms (-) Sales of foreign affiliates of firms. The data cover only those deals that involved an acquisition of an equity stake of more than 10%. Data refer to the net purchases by the region/economy of the ultimate acquiring company.

(Sources: United Nations Conference on Trade and Development (UNCTAD), 2015. World Investment Report 2015. United Nations.)

Surprisingly, it is observed that 61% of global cross-border M&As in 2014 was concentrated on top ten foreign investors, which were the USA (2,061 M&A deals in 2014), the UK (859), Canada (573), France (481), Japan (440), Germany (423), China (331), Switzerland (271), Australia (244), and Netherlands (236), nine of which were developed countries. Moreover, 57.6% of global cross-border M&As in 2014 was concentrated on top ten recipient countries, which were the USA (1,545 M&A deals in 2014), the UK (879), Germany (616), Canada (512), France (422), Spain (369), Australia (355), China (337), Russia (302), and Italy (240), eight of which were developed countries. As seen in the lists of the top ten countries in terms of cross-border M&A purchases and sales in Table 1.2, eight countries (the USA, the UK, Germany, Canada, France, Australia, and China) were the largest foreign investors as well as the recipient at the same time.

Based on the fact that 75% of global cross-border M&A purchases in 2014 came from developed countries and nine of the top ten foreign investors were from developed countries, cross-border M&As were a dominant entry mode among foreign investors in developed countries. Moreover, developed countries were favourable destinations for foreign acquiring firms, attracting about 70% of global cross-border M&A deals in 2014. That is, global cross-border M&As were significantly affected by developed countries.

Table 1. 2 Number of Cross-Border M&A Purchases and Sales by Top Ten Countries

Number of Cross-Border M&A Purchases by Top Ten Countries										
Region/Economy	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014
United States	682	2,327	2,245	1,966	1,379	1,724	1,896	1,879	1,686	2,061
United Kingdom	620	1,351	1,373	1,104	695	799	916	780	758	859
Canada	165	503	672	536	566	604	678	576	483	573
France	276	715	708	654	450	505	529	438	401	481
Japan	348	237	306	310	297	341	398	460	383	440
Germany	159	862	618	579	502	431	519	465	400	423
China	5	47	159	154	187	245	258	287	283	331
Switzerland	99	316	273	327	245	272	274	234	216	271
Australia	92	233	539	305	213	244	276	221	193	244
Netherlands	97	438	400	411	259	323	304	233	195	236

Number of Cross-Border M&A Sales by Top Ten Countries										
Region/Economy	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014
United States	1,155	1,945	1,957	1,652	1,251	1,372	1,530	1,431	1,269	1,545
United Kingdom	618	1,178	1,085	985	618	792	849	807	766	879
Germany	200	581	776	601	472	469	586	562	463	616
Canada	217	564	589	557	484	485	500	535	461	512
France	173	537	530	457	326	417	431	390	347	422
Spain	108	294	342	338	244	272	277	262	241	369
Australia	143	414	485	460	439	462	420	422	405	355
China	-	155	437	436	322	400	391	354	334	337
Russian Federation	2	86	219	312	387	557	442	392	325	302
Italy	119	240	296	305	213	238	241	165	178	240

(Sources: United Nations Conference on Trade and Development (UNCTAD), 2015. World Investment Report 2015. United Nations.)

The worst global recession since the Second World War hit developed countries' economies in 2008 and 2009 and caused those firms in developed countries to change their organisational strategy of international growth. As financial markets became unreliable in the slowdown, firms sought risk-free assets and organic growth such as greenfield investment, which reacted with a certain time lag to economic shocks (UNCTAD, 2009). In contrast to the increasing popularity of greenfield investment in response to unstable financial markets, cross-border M&As were less preferred. As seen in Table 1.3, the value of global cross-border M&As reached a historical high at US \$1 trillion in 2007 and exceeded that of greenfield investments in 2007 for the first time. Nevertheless, the surge in global cross-border M&As in 2007 reversed a steep fall by the economic downturn in 2008 and 2009. The value of cross-border M&As fell from US \$1 trillion in 2007 to US \$618 billion in 2008 and US \$288 billion in 2009, the former decline of which resulted in less than half of the value of greenfield investment, and the latter one of which resulted in about one third of the value of greenfield investment, during the equivalent period.

Table 1. 3 Value of Global Cross-Border M&As and Greenfield Investment (Billions of US Dollars)

	2000	2007	2008	2009	2010	2011	2012	2013	2014
Value of Global Cross-Border M&As	960	1,033	618	288	347	553	328	313	399
Value of Global Greenfields		845	1,355	974	825	879	631	707	696

(Sources: United Nations Conference on Trade and Development (UNCTAD), 2015. World Investment Report 2015. United Nations.)

After the 2008-2009 decline, there were strong signs of rebounds in global cross-border M&As. Global cross-border M&As returned to growth, with their value rising from US \$288 billion in 2009 to US \$399 billion in 2014, and their number rising from 8,691 in 2009 to 9,696 in 2014. However, the increases in the value and number of cross-border M&As were not enough to recover the pre-crisis levels in 2007 and compensate a significant drop of their value and number in 2012 and 2013. Such slow and weaker growth of global cross-border M&As significant lay on EU countries.

One major cause for the slow recovery of global cross-border M&As and developed countries' less-than-expected performance can be found in weaker growth in EU (Gestrin, 2014). In the situation where global cross-border M&As increased from US \$288 billion in 2009 to US \$399 billion in 2014, cross-border M&As purchased by EU dropped by 75% from US \$132 billion in 2009 to US \$33 billion in 2014 and disturbed the faster recovery of global cross-

border M&As. This drop was significantly influenced by dramatic decreases in the value of cross-border M&As driven by six EU countries: Austria (a decline from US \$3,309 million in 2009 to US \$375 million in 2014 by 89%); Denmark (from US \$3,337 million in 2009 to US \$2,768 million in 2014 by 17%); France (from US \$42,175 million in 2009 to US \$16,586 million in 2014 by 61%); Italy (from US \$17,195 million in 2009 to US \$-9,770 million in 2014 by 157%); Portugal (from US \$723 million in 2009 to US \$ -602 million in 2014 by 183%); and the UK (from US \$27,605 million in 2009 to US \$ -79,128 million in 2014 by 387%), as shown in Table 1.4. While Austria, Denmark, France, Italy, Portugal and the UK saw the value of their cross-border M&A purchases significantly decreasing, the respective value of their cross-border M&A sales rocketed by 149%, 314%, 4,450%, 655%, 389%, and 129%. Table 1.5 describes the value of cross-border M&A sales by EU countries. Consequently, cross-border M&A purchases from EU in 2014 stopped at 6% of its peak recorded in 2007. Global cross-border M&As in 2014 recovered about 38% of their pre-crisis levels in 2007. In this regard, recent trends towards global cross-border M&As were significantly influenced by EU.

Table 1. 4 Value of Cross-Border M&As Purchased by EU Countries* (Millions of US Dollars)

Region/Economy	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014
World	98,050	959,681	1,032,689	617,649	287,617	347,094	553,442	328,224	312,509	398,899
Developed economies	84,688	894,982	867,556	479,590	191,214	224,759	431,899	183,858	178,870	228,389
Developing economies	8,360	60,810	136,937	114,408	80,445	100,378	101,277	124,198	120,043	152,106
Europe	57,762	724,478	593,545	381,684	132,250	44,262	173,190	41,842	34,387	33,137
Austria	291	2,002	5,923	3,243	3,309	1,525	3,733	1,835	8,813	375
Belgium	642	17,626	9,269	30,775	-9,804	477	7,841	-1,354	13,251	4,460
Cyprus	-	36	5,879	8,875	647	-562	5,766	8,060	652	3,771
Czech Republic	-	-80	572	72	1,573	14	25	474	4,012	1
Denmark	790	4,362	3,339	2,841	3,337	-3,570	-133	553	214	2,768
Finland	-33	10,579	-1,054	12,951	641	1,015	2,353	4,116	1,754	-1,779
France	18,554	154,785	73,312	66,800	42,175	6,180	37,090	-3,051	2,177	16,586
Germany	3,731	9,737	59,904	63,785	26,928	7,025	5,644	15,674	6,833	29,490
Greece	-	4,411	1,502	3,484	387	553	-148	-1,561	-1,015	268
Ireland	602	5,985	7,340	3,505	-664	5,124	-5,648	2,629	-4,091	10,496
Italy	1,678	18,439	62,173	20,976	17,195	-5,190	3,902	-1,633	2,440	-9,770
Luxembourg	1,350	492	16	5,906	24	1,558	1,110	-716	3,794	23,172
Netherlands	3,178	33,604	4,283	48,466	-3,506	16,418	-4,402	-1,092	-3,243	-1,279
Poland	-	-1	189	1,090	229	201	511	3,399	243	1,140
Portugal	-	1,282	4,071	1,330	723	-8,965	1,642	-4,735	-603	-602
Spain	4,295	36,495	40,015	-12,160	-507	2,898	15,505	-1,621	-7,348	5,555
Sweden	12,529	19,399	30,983	6,883	9,819	855	-2,381	151	-4,994	9,885
United Kingdom	5,054	339,546	230,269	52,619	27,605	-3,851	69,638	-2,118	3,514	-79,128

Note. * The value of cross-border M&A purchases is calculated on a net basis as follows: Purchases of firms abroad by acquiring firms (-) Sales of foreign affiliates of firms. The data cover only those deals that involved an acquisition of an equity stake of more than 10%. Data refer to the net purchases by the region/economy of the ultimate acquiring company.

(Sources: United Nations Conference on Trade and Development (UNCTAD), 2015. World Investment Report 2015. United Nations.)

Table 1. 5 Value of Cross-Border M&As Sold by EU Countries* (Millions of US Dollars)

Region/Economy	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014
European Union	38,610	491,240	528,937	258,391	120,323	118,187	184,582	128,270	120,748	160,642
Austria	271	254	9,661	1,327	2,067	354	7,002	1,687	148	3,087
Belgium	2,639	2,511	733	3,995	12,375	9,449	3,946	1,786	6,553	2,402
Bulgaria	0	588	959	227	191	24	-96	31	-52	272
Croatia	0	149	674	274	0	201	92	81	100	15
Cyprus	0	0	807	812	47	693	782	51	1,417	1,230
Czech Republic	0	811	246	276	2,473	-530	725	37	1,617	68
Denmark	465	12,017	7,158	5,962	1,270	1,319	7,958	4,759	1,341	3,990
Estonia	0	48	-59	110	28	3	239	58	-39	23
Finland	52	-131	8,571	1,163	382	336	1,028	1,929	-35	8,116
France	7,036	33,579	30,145	6,609	609	3,573	23,161	12,013	8,953	27,704
Germany	4,391	232,578	37,546	32,216	12,742	10,515	13,440	7,793	16,736	15,034
Greece	102	880	1,379	7,387	2,074	283	1,204	35	2,488	1,450
Hungary	226	59	2,068	1,728	1,853	223	1,714	96	-1,108	-285
Ireland	467	3,665	811	3,025	1,712	2,127	1,934	12,096	11,147	3,567
Italy	1,067	11,300	27,211	-5,150	2,335	6,329	15,095	5,286	5,748	15,315
Lithuania	0	172	35	172	23	470	386	39	30	79
Luxembourg	3	26	7,379	-3,510	444	2,138	9,495	6,461	177	3,209
Netherlands	1,193	28,779	162,533	-9,731	18,114	4,162	14,041	17,637	22,896	13,086
Poland	0	8,981	680	1,507	666	1,195	9,963	824	434	907
Portugal	213	4,095	1,574	-1,312	504	2,772	911	8,225	7,465	2,464
Romania	0	525	1,926	996	331	148	88	151	-45	214
Slovakia	0	1,783	66	136	21	0	0	126	541	13
Slovenia	0	0	57	418	0	332	51	330	30	495
Spain	2,217	20,095	57,440	37,041	31,849	10,348	17,716	4,978	5,185	23,424
Sweden	-33	15,990	3,151	17,930	2,158	527	7,647	5,086	-76	1,027
United Kingdom	18,300	112,160	166,225	154,587	25,933	60,826	46,060	36,576	29,088	33,462

* The value of cross-border M&A sales is calculated on a net basis as follows: Sales of firms in the host economy to foreign firms (-) Sales of foreign affiliates in the host economy. The data cover only those deals that involved an acquisition of an equity stake of more than 10%. Data refer to the net sales by the region/economy of the immediate acquired company.

(Sources: United Nations Conference on Trade and Development (UNCTAD), 2015. World Investment Report 2015. United Nations.)

In spite of persistent downturn risks to global economy and uncertainty about foreign market entry with cross-border M&As, cross-border M&As are expected to flourish in accordance with global economic recovery. World Investment Prospects Survey (WIPS), which forecasted an outlook on future trends in foreign direct investment by multinationals and investment promotion agencies (UNCTAD, 2014), had a positive outlook on foreign investment climate in 2016. According to WIPS (UNCTAD, 2014), global economy would recover for the year 2016, with developed countries remaining important foreign investors. Moreover, there were expectations about the future recovery of cross-border M&As, while they would remain a preferred entry mode over greenfield investments and non-equity partnership. Therefore, cross-border M&As can regain their popularity.

In summary, the unusual magnitude of on-going economic crisis in 2008 - 2009 over the world and the slower growth of European countries' economy deteriorated global economy and discouraged foreign investors from participating in cross-border M&As. However, cross-border M&As have developed as a major foreign entry mode, growing more than four-fold from 1990 to 2014. Moreover, positive outlook on global economic recovery in 2016 will draw foreign investors' attention to cross-border M&As as a key consideration of designing their international business strategy. Therefore, cross-border M&As will remain potential.

1.2. Cross-Border M&As

Cross-border M&As skyrocketed four-fold from US \$98 billion in 1990 to US \$399 billion in 2014, representing 29% of global foreign direct investment expenditure on cross-border M&As in 2014 (UNCTAD, 2015). Though recent years have witnessed a marked increase in cross-border M&As, empirical studies consistently report high failure rate (Child et al., 1999; Schoenberg, 2006). For example, recent research by Child et al. (1999) and Schoenberg (2006) report failure rates of 44% to 56%. Some researchers even speak of M&A failure rates between 70% and 90% (Christensen et al., 2011). Such high M&A failure rates draw scholastic attention to identifying the determinants of M&A performance (Datta et al., 1992; Saxton & Dollinger, 2004). This has been the central to the issues of M&A research over the last 30 years (Cartwright & Schoenberg, 2006).

This study attributes successful cross-border M&As to the realisation of post-acquisition innovation driven by the choice of post-acquisition structure between structural integration and autonomy. Building from knowledge-based theory, this study attributes the realisation of post-acquisition innovation to knowledge-transfer activities and knowledge-sharing capabilities driven by the choice of post-acquisition structure. That is, the sources of synergy

creation within cross-border M&As reside in post-acquisition innovation, knowledge transfer, and knowledge sharing between an acquiring and acquired firm. The choice of post-acquisition structure is the key to unlocking the synergy. In this section, I discuss cross-border M&As as the context of post-acquisition innovation, knowledge transfer and sharing, and the choice of post-acquisition structure.

1.2.1. Innovation within Cross-Border M&As

Innovation matters all countries and all industries (Teece, 2000; UNCTAD, 2005). For a firm in a developed country, which remains a leader in global cross-border M&As (UNCTAD, 2015), it is important to internationalise its innovation activities (Anand & Delios, 2002; Buckley et al., 2016; Chen, 2008). A firm develops its innovation capability by relocating its R&D centre to a host country with a rich pool of science and engineering talent and exploiting its advanced innovation capabilities. For example, Japanese firms acquire local firms in US to procure their advanced technology and marketing capabilities (Chen, 2008). Moreover, Developing Asia such as China, Viet Nam, India, and Thailand emerges as the attractive destination of the internationalisation of innovation (Atuahene-Gima & Murray, 2007; UNCTAD, 2005). For example, Toyota, Motorola, Microsoft established their respective R&D centre in Thailand, China, and India. Moreover, Japanese manufacturers expand their production capacities in Viet Nam. Acquiring a firm in a developing country, an acquiring firm from a developed country complements its weak country-specific advantages and exploits its competitive advantages in the host country (Hennart, 2009). The complementary use of the acquiring firm's competitive advantages and the host-country specific advantages can enhance efficiency in production, and adapt its technology and products to the local market (Anand & Delios, 2002; Chen, 2008; Hennart, 2009). This trend towards the internationalisation of innovation is also identified among firms in developing countries (Buckley et al., 2016).

A firm from a developing country is weak in its firm-specific advantages essential to catch up with competitors in global industries (Buckley et al., 2016; Hennart, 2012). Locating and conducting innovation activities in a developed host country, a developing-country firm can acquire advanced technology and marketing capabilities embedded in the acquired firm and the host country and overcomes its firm-specific disadvantages (Buckley et al., 2016; Deng & Yang, 2015). Moreover, country-specific advantages such as abundant natural resources, low cost labour and land, and large market size are the sources of operational efficiency (Deng & Yang, 2015). However, due to the context-boundedness nature of country-specific advantages, it is difficult for a developing-country firm to extend its home-country resource endowments

into a host country. Accordingly, purchasing a developing-country firm, an acquiring firm from a developing country exploits the acquired firm's host-country specific advantages and builds and reinforces economies of scale on a global basis. Therefore, cross-border M&As are an innovation-based strategy for firms from both developed and developing-countries.

The intensity and nature of innovation activities may differ depending on industry (UNCTAD, 2005). However, firms get engaged in certain levels of innovation activities regardless of their industry sector and produce different types of innovation outcomes. For example, manufacturing industry, which is considered a dominant user of innovation, varies in the level of innovation commitment and focuses on improvements in reduction of manufacturing cost and scale-up of manufacturing capacity (Andersson & Xiao, 2016). Manufacturing firms innovate, getting engaged in formal R&D such as improvements in technology and the development of new products and processes (Bertrand, 2009). Service industry, where it is presumed that innovation is rare and therefore neglected in the relevant literature, is found to spend higher investments in innovation than manufacturing (UNCTAD, 2005). Service providers may not structure formal R&D activities and make regular commitment to innovation compared to manufacturing firms. However, service industry is knowledge-intensive. The source of value creation in service industry is concentrated on human capital and intangible assets (Reuer et al., 2004). Therefore, innovation in service industry is determined by service-delivery processes and knowledge-development processes (Fosstenlokken et al., 2003). Primary sector with the advent of biotechnology and generic modification in agriculture emerges as another innovation-intensive industry (UNCTAD, 2005). The application of biotechnology to agriculture production enables a higher yield and hybrid varieties of crops and vegetables (UNCTAD, 2005). Moreover, high and rising profitability of minerals, oil, and metals encourage firms to develop innovation accelerating primary production.

Identifying cross-border M&As as a method of achieving innovation, previous literature is limited to high or medium-technology intensive industries (Clodt et al., 2006; Desyllas & Hughes, 2010; Makri et al., 2010). Extending the scope of the previous literature, this study uses firm-level data and investigates innovation without distinction between industries (Bertrand, 2009; Bertrand & Capron, 2015). As a result, the findings of this study can be generalisable across industries as a whole.

In a highly turbulent environment where firm survival and growth depend on speed (Blonigen & Taylor, 2000), internal innovation is not sufficient to respond to the emerging

needs of customers (Cassiman & Veugelers, 2006). Because organisational routines exhibit greater inertia for change or learning, a firm tends to commit itself to its established organisational routines and develops existing knowledge and resources through the repetition of organisational routines (Nelson & Winter, 1982). However, the path-dependent nature of organisational routines turns organisational capabilities into organisational rigidity (Rosenkopf & Nerkar, 2001; Vermeulen & Barkema, 2001). Therefore, organisational routines limit the internal development of new knowledge and innovation. A firm seeks new knowledge and resources that can delay the obsolescence of technology and innovation.

The keys to effective pursuit of innovation are the acquisition of external knowledge beyond a firm's geographical boundary (Rosenkopf & Almeida, 2003), access to local resources (Anderson et al., 2015), and the leveraging of its competitive advantages in new settings (Dunning, 1994). A firm with reliance on a geographically local search for external knowledge can find it merely substituting for its existing resources (Rosenkopf & Almeida, 2003). Moreover, a firm with limited manufacturing capacity and small market size in its home nations underutilises its existing resources and suffers from a loss of economies of scale (Bertrand & Capron, 2015; John & Harrison, 1999). Therefore, a firm goes global through cross-border M&As, which enable the firm to achieve immediate access to new knowledge and resources of its acquired firm and the host country and expand its business abroad (Anand & Delios, 2002; Bertrand & Capron, 2015). In this regard, cross-border M&As are preferred as knowledge-seeking, resource-seeking, and market-development seeking opportunities (Bertrand, 2009; Deng & Yang, 2015).

Countries have their own national innovation system that shapes firm-specific innovation capabilities (Bertrand, 2009). Thus, the M&As of a foreign firm offer an acquiring firm an opportunity to tap into new knowledge developed outside its home country and gain new ideas and insights that motivate knowledge development and overcome the self-destructive nature of its existing knowledge bases (Bertrand, 2009; Markides & Ittner, 1994; Morosini et al., 1998). In this regard, innovation in cross-border M&As is derived from the potential for having access to a diverse pool of knowledge of a partner firm and combining it with the existing knowledge sets of the other firm (Ahammad et al., 2016; Anand & Delios, 2002; Bertrand & Capron, 2015; Seth et al., 2002). For example, the acquisition of an acquired firm with advanced marketing capabilities by an acquiring firm with advanced technology enables the acquired firm to produce products tailored to local customers and meet their demands on the one hand but the acquiring firm to effectively attract local customers on the

other hand (Anand & Delios, 2002). Exploiting a partner firm's knowledge that complements the existing knowledge stocks of the other firm, cross-border M&A firms can improve their existing knowledge bases and develop new knowledge. Increases in knowledge depth and breadth contribute to upgrading their existing products and developing new products (Makri et al., 2015; Prabhu et al., 2005).

An acquired firm's location-bound resources can be another important consideration for choosing cross-border M&As (Buckley et al., 2014; Chari & Acikgoz, 2016; Deng & Yang, 2015; Jory & Ngo, 2014). Because location-specific advantages are not fungible across borders (Anand & Delios, 1997), it is important for a foreign firm to choose an entry mode that enables it to build organisational legitimacy in a host market and overcome the liabilities of foreignness (Zaheer, 1995). Cross-border M&As are an effective means of having access to location-specific advantages embedded in a host country. The acquisition of an acquired firm in a host country offering cheap capital and natural resources brings to improvements in operational efficiency, cost-saving in manufacturing, and economies of scale (Chari & Acikgoz, 2016; Nair et al., 2015). Thus, the mismatch between what an acquired firm can offer an acquiring firm with what the acquiring firm needs from the acquired firm and the host country can limit efficiency-based innovation in cross-border M&As.

Lastly, cross-border M&As are motivated to achieve market development opportunities (Seth et al., 2000; Seth et al., 2002). Expanding into new geographical locations, an acquiring firm can make a balance of market presence across countries on the one hand (Deng & Yang, 2015) but improve the productivity of their existing resources and capabilities on the other hand (Bertrand & Capron, 2015). Investing abroad, an acquiring firm can reduce its reliance on home market and overcome home market pressure regarding trade barriers (Deng & Yang, 2015; Seth et al., 2000; Seth et al., 2002). Moreover, replicating an acquiring firm's competitive advantage in a new setting and exploiting it with an acquired firm's local knowledge and resources, the firms can realise the productivity of their existing resources and realise economies of scale in manufacturing, R&D, and sales (Bertrand & Capron, 2015; Seth et al., 2000; Seth et al., 2002). Therefore, a firm participating in cross-border M&As with the desire to expand its business abroad expects to improve its position in global market as well as operational efficiency.

In addition to the strategic reasons of innovation for participation in cross-border M&As, an acquiring firm may purchase a foreign firm to realise diversification benefits (Seth et al., 2002). Purchasing a firm in dissimilar market and/or industry, an acquiring firm can spread risk

and stabilise its income stream. However, this study argues that the major motive for cross-border M&As is to take advantage of the strategic opportunities. Because M&As are an expensive and promising foreign investment that can produce both cost-based and revenue-based synergy (Capron, 1999), an acquiring firm attempts to maximise their value as much as possible and does not want to miss the opportunity to create synergy. Even if an acquiring firm buys a foreign acquired firm to leverage diversification advantages, it aims not only to capture value through the diversification advantages but also to leverage strategic opportunities and create synergy as a result (Angwin & Meadows, 2015).

In summary, the source of synergy creation within cross-border M&As resides in innovation. Exploiting the knowledge-seeking, resource-seeking, market-development opportunities, M&A firms improve their knowledge bases and positioning in scale and scope on a global basis. That is, the synergistic benefits are derived from the application and exploitation of a partner firm's knowledge and resources, specifically the transfer and sharing of knowledge across an acquiring and acquired firm. The rationales for the knowledge-based mechanisms within cross-border M&As are explained in the following section.

1.2.2. Knowledge-Based Mechanisms within Cross-border M&As

Knowledge, which is taken in tacit forms of resources and embedded in them, offers the foundation of a firm's competitive advantage (Barney, 1991). Transferring and sharing existing knowledge and combining it with other forms of resources and other types of knowledge in terms of management, marketing, technology, and manufacturing (Anand & Delios, 2002; Nair et al., 2015), knowledge functions as an input to knowledge development and innovation (Puranam & Srikanth, 2007). That is, knowledge contributes to innovation in the form of newness and improvements in knowledge, products, processes, and services (Cefis & Marsili, 2015; Prabhu et al., 2005; UNCTAD, 2005). Knowledge transfer and sharing between an acquiring firm and an acquired firm are essential for maximising the potential for cross-border M&As.

Identifying the potential for exploiting existing and excess knowledge and resources in new use and the areas where a firm can compensate for deficiencies in existing knowledge and resources of the other firm (Capron, 1999), an acquiring and acquired firm transfer and share their knowledge and resources each other. For example, in the case of knowledge-seeking opportunity, an acquiring firm purchases an acquired firm with relatively strong knowledge in areas where it is weak or an acquired firm with relatively weak knowledge in areas where it is

strong (Capron, 1999; Junni et al., 2015). Transferring the competitive advantage of an acquiring firm or an acquired firm to the other firm and complementing the weak knowledge bases of the recipient firm, the M&A firms can improve their existing knowledge bases and innovation capabilities (Makri et al., 2010; Prabhu et al., 2005; Sears & Hoetker, 2014).

In a similar vein, within cross-border M&As with the resource-seeking and market-development opportunities, internationalising an acquiring firm's competitive advantage throughout an acquired firm and leveraging the acquired firm's knowledge-based resources, the combined firm can build competitiveness (Anand & Delios, 2002). For example, transferring and sharing an acquiring firm's advanced R&D and technological capabilities and an acquired firm's excess manufacturing capacity each other, the M&A firms can realise cost saving and economies of scale (Anand & Delios, 2002). Transferring and sharing an acquiring firm's advanced technology and an acquired firm's marketing skills embedded in the host market each other, the acquiring firm can effectively penetrate the host market and the acquired firm can improve its R&D capabilities (Anand & Delios, 2002). Therefore, Innovation-based synergy dominates cross-border M&As (Bauer et al., 2016; Nair et al., 2015; Reus et al., 2016). At the heart of cross-border M&As lie the acquisition and exploitation of knowledge stocks of a partner firm.

1.2.3. Post-Acquisition Structure within Cross-Border M&As

The issue of designing post-acquisition structure revolves around cultural differences between an acquiring and an acquired firm (Slangen, 2006; Stahl & Voigt, 2008). Because culture is difficult to change and deeply embedded in people's mind, cultural differences represent differences in underlying assumptions and suggest incompatibility between the practices and value of two previously separate firms. Because M&As bring an acquiring and an acquired firm to frequent and intensive communication and interaction (Allatta & Singh, 2011), cultural differences between them are often viewed as the source of cultural clash and conflicts and incur high costs associated with structural integration (Brock, 2005). Cross-border M&As which do not only represent the combination of two independent firms but also feature the phenomenon of inter-firm collaborations across borders are perceived as more demanding than domestic M&As (Hajro, 2015).

Culture constitutes three layers of (1) behaviour and artifacts; (2) beliefs and values; and (3) underlying assumptions (Schein, 1990). A firm can develop its unique organisational culture, modifying the first two levels of the culture embedded in people as they are the easiest to

observe. However, the firm cannot develop its organisational culture detached from the underlying assumptions on which people behave, think, and react as they are the deepest layer and embedded in national culture (Laurent, 1986). Accordingly, organisational culture is developed within the neighbourhood of national culture. Based on this, it is often assumed that differences in organisational culture within domestic M&As are easy to overcome but differences in national culture within cross-border M&As are hard to do (Hajro, 2015; Stahl & Voigt, 2008). Within cross-border M&As where an acquiring firm forces an acquired firm to abandon its previous organisational identity and accept its standardised rules, procedures, and processes, which normally occurs within structural integration (Birkinshaw et al., 2000), the acquired firm can unfavourably react to M&As (Krug & Hegarty, 1997). Therefore, structural integration within cross-border M&As can be a catalyst for conflicts between acquiring and acquired employees (Brock, 2005; Hajro, 2015; Lee et al., 2015; Reus & Lamont, 2009). An acquiring firm tends to grant great autonomy to a foreign acquired firm and avoids the possibility for cultural clash and employee resistance (Slangen, 2006).

In spite of the value-disruptive nature of differences in national culture between an acquiring and acquired firm, a number of previous studies contradict the widely believed view, comparing the effect of differences in national culture with that of organisational culture on cultural compatibility (Very et al., 1997), social conflicts between an acquiring and acquired firm (Vaara et al., 2012), and M&A outcomes (Weber et al., 1996). For example, Very et al. (1997) show that a domestically acquired firm perceives the culture of its acquiring firm as incompatible, while a foreign acquired firm perceives the culture of its acquiring firm as rather compatible. In a similar vein, Vaara et al. (2012) show that differences in organisational culture are the causes of social conflicts, whereas differences in national culture rather reduce social conflicts between an acquiring and acquired firm. Weber et al. (1996) show that in domestic M&As differences in organisational culture are negatively associated with employee commitment, attitudes towards the M&A, and the level of cooperation between acquiring and acquired firm employees. By contrast, in cross-border M&As, differences in national culture are positively associated with attitudinal and behavioural outcomes. These findings can be understood that managers involved in cross-border M&As become more sensitive to cultural issues that are often overlooked in domestic M&As (Larsson & Finkelstein, 1999; Stahl & Voigt, 2008), though differences in organisational culture are more salient (Vaara et al., 2012; Very et al., 1997). Therefore, cross-border M&As do not necessarily underperform domestic M&As and destroy synergy (Stahl & Voigt, 2008; Very et al., 1997). Cross-border M&As are not necessarily more stressful than domestic M&As (Very et al., 1996).

Perceiving structural integration within cross-border M&As as a catalyst for conflicts between acquiring and acquired employees, which results in stress, anxiety, and employee resistance (Hajro, 2015; Lee et al., 2015), some studies argue that autonomy is the best post-acquisition structure within cross-border M&As (Slangen, 2006). Nonetheless, Very et al. (1997) suggest that structural integration is more appropriate for cross-border M&As. Sinkovics et al. (2015) show that within cross-border M&As structural integration realises cost-saving and builds the effective relationship between an acquiring and acquired firm, which lead to successful cross-border M&As. These studies show that structural integration can be an optimal choice of post-acquisition structure within cross-border M&As. Autonomy is not always a key to unlocking performance effects within cross-border M&As. Therefore, relaxing the assumption that structural integration destroys the benefits of cross-border M&As, this study investigates post-acquisition activities led by the choice between structural integration and autonomy and subsequently M&A outcomes within cross-border M&As.

This study argues that at the heart of value creation lies post-acquisition structure (Cording et al., 2008). Depending on the choice of post-acquisition structure, the way in which an acquiring and acquired firm realise post-acquisition innovation and achieve M&A success differs. Building from knowledge-based theory, this study argues that post-acquisition structure leads an acquiring and acquired firm to shape appropriate knowledge-based behaviour and competency and then realises post-acquisition innovation. That is, this study takes into no consideration the market characteristics of an acquiring and acquired firm, which are a factor distinguishing cross-border M&As from domestic M&As. Because the dynamics of cross-border M&As are largely similar to those of domestic M&As in this study, its results can be also understood in domestic M&A contexts. For similar reasons, some previous studies on post-acquisition innovation little distinguish between domestic M&As and cross-border M&As and incorporate them into M&As in general (Bertrand, 2009; Cefis & Marsili, 2015; Chen et al., 2010; Grimpe, 2007).

1.3. Rationales for Mediation Effects

According to a Structure-Conduct-Performance (SCP) paradigm, an organisational structure guides a firm towards appropriate conduct (i.e., strategy) and then firm performance (McWilliams & Smart, 1995). That is, firm conduct translates into firm performance from a chosen organisational structure. Mediating mechanisms improve the understanding of performance differences driven by the choice of organisational structure. That is, M&A outcomes are dependent on post-acquisition conduct. The effects of the post-acquisition

structures of structural integration and autonomy on M&A outcomes can be better understood by mediating mechanisms that explain post-acquisition conduct. Moreover, according to Cording et al. (2008), post-acquisition is involved with a sequence of ambiguous links that hinders managers' abilities to predict and understand the consequences of their decisions. In order for casual ambiguity to be reduced, mediating mechanisms are required to understand the relationships between the decision on post-acquisition structure and M&A outcomes. Extending the principles behind the SCP paradigm and the logic behind casual ambiguity, this study explains performance outcomes arising from the post-acquisition structures of structural integration and autonomy via mediating variables that represent post-acquisition conduct, specifically post-acquisition innovation in this study.

Building from the logics behind the SCP paradigm and causal ambiguity, this study argues that the most crucial role of post-acquisition structure is found in two primary areas: (1) shaping actions to make the most of an M&A event and (2) undertaking those actions to realise their consequence. In other words, post-acquisition structure leads an acquiring and acquired firm to produce performance effects primarily through the competitive actions that enable an acquiring and acquired firm to undertake (Ndofor et al., 2011). Therefore, this study suggests an integrative framework of M&A success, with innovation-based mediating mechanisms and knowledge-based mediating mechanisms. This section provides explanations about the rationales for mediation effects of (1) exploitation and exploration innovation on the relationships between post-acquisition structure and M&A outcomes (i.e., M&A performance and NPD performance) and (2) knowledge transfer and knowledge sharing on the relationships between post-acquisition structure and post-acquisition innovation.

1.3.1. Rationales for Mediation Effects of Exploitation and Exploration Innovation

Borrowing from the construct of organisational ambidexterity, which is a parent construct of exploitation and exploration innovation, from Gibson and Birkinshaw (2004), ambidexterity is a meta-capability that results from the interaction and combination of the multi-faceted dimensions of a firm. A firm builds organisational systems and processes that shape its individual and collective behaviour and capabilities to seek exploitation and exploration innovation. The realisation of exploitation and exploration innovation subsequently enhances firm performance. Because the process of developing organisational capacities for exploitation and exploration innovation is complex, time-consuming, and causally ambiguous, the necessary organisational systems and processes needed to facilitate exploitation and exploration innovation do not directly produce firm performance; rather they

contribute to the establishment of exploitation and exploration innovation and then achieve firm performance.

Building from the mechanism of organisational ambidexterity, previous literature investigates exploitation and exploration innovation as mediators leading to firm performance (Morgan & Berthon, 2008), export venture performance (Hughes et al., 2010), and NPD performance (Li & Huang, 2012; Mu, 2015; O’Cass et al., 2014); however, little is known about the mediating effects of exploitation and exploration innovation within (cross-border) M&A contexts. This study argues that the choice of post-acquisition structure is sequentially close to the realisation of exploitation and exploration innovation than it is to M&A performance and NPD performance. Employing exploitation and exploration innovation to explain the effects that post-acquisition structure has on M&A and NPD performance, this study permits a more parsimonious approach to hypothesis development for this relatively complex model.

1.3.2. Rationales for Mediation Effects of Knowledge Transfer and Knowledge Sharing

According to knowledge-based theory, it is not the possession of knowledge itself but knowledge transfer and sharing that drive a firm’s sustainable competitive advantage (Grant, 1996a). For this reason, a key assumption held among existing literature on M&As is that post-acquisition structure includes a process by which M&A firms transform knowledge embedded in the other firm into post-acquisition innovation (Bauer et al., 2016). However, without detailed explanations about how and why knowledge transfer and knowledge sharing matter in the relationship between post-acquisition structure and post-acquisition innovation, it may be too early to argue that the assumption is valid.

Knowledge is embedded in an organisational and social context of the creation of that knowledge (Szulanski, 1996; Morosini et al., 1998). Because of the context-boundedness characteristic of knowledge, knowledge transfer across organisational boundaries and borders are time-consuming, expensive, and difficult (Gupta & Govindarajan, 2000; Perez-Nordtvedt et al., 2008). In a similar vein, M&As, where an acquired firm can create a bias towards an acquiring firm and perceive the acquiring firm as an external threat to its existing organisational identity and culture (Stahl & Voigt, 2008), may impair knowledge sharing between the acquiring and acquired firm (Kogut & Zander, 1992). Therefore, the central issue of post-acquisition innovation within knowledge-based theory is to promote an environment in which knowledge context-boundedness is overcome and an acquired firm is encouraged to keep motivated to collaborate and share knowledge with an acquiring firm. This study argues

that it is post-acquisition structure that facilitates knowledge transfer and knowledge sharing between an acquiring and acquired firm and then creates post-acquisition innovation. From this point of view, knowledge transfer and knowledge sharing enable post-acquisition innovation from post-acquisition structure.

1.4. Research Problems

Though cross-border M&As remain an increasingly popular mode of international expansion, they should be chosen with great caution. This is because cross-border M&As are infamous for high failure rates, which typically are reported to be between 40% and 60% on average (Child et al., 1999; Schoenberg, 2006). In response to this challenging and risky foreign investment strategy, existing studies attribute M&A success to effective post-acquisition implementation and attempt to discover the post-acquisition determinants of M&A outcomes at two different levels: (1) firm-level factors such as an acquired firm's top management turnover (Cannella & Hambrick, 1993; Kiessling et al., 2012; Krishnan et al., 1997; Saxton & Dollinger, 2004; Zollo & Singh, 2004) and acquired employees' reaction (Larsson & Finkelstein, 1999); and (2) inter-firm factors such as changes in an acquired firm's management practices (Child et al., 1999), structural integration and autonomy (Cording et al., 2008; Datta & Grant, 1990; Homburg & Bucerius, 2005; Lin, 2014; Saxton & Dollinger, 2004; Sinkovics et al., 2015; Very et al., 1997; Weber, 1996; Zollo & Singh, 2004), structural integration speed (Homburg & Bucerius, 2005, 2006; Cording et al., 2008; Bauer & Matzler, 2014; Sinkovics et al., 2015), knowledge-transfer activities (Ahammad et al., 2016; Capron & Pistre, 2002; Capron, 1999; Capron et al., 2001; Reus et al., 2016), knowledge-sharing capabilities (Brock, 2005), and structural integration and human integration (Birkinshaw et al., 2000; Larsson & Finkelstein, 1999; Ellis et al., 2009).

Among a wide range of the post-acquisition determinants of M&A outcomes, the effects of post-acquisition structure on M&A outcomes have been central to a theory of M&As (Datta & Grant, 1990; Cording et al., 2008). Although structural integration and autonomy are perceived as a context in which an acquiring and acquired firm exhibit their conduct and then produce firm performance (Cording et al., 2008), existing literature is limited to discussion on the direct effects of structural integration and autonomy on M&A outcomes (Datta & Grant, 1990; Grimpe, 2007; Larsson & Finkelstein, 1999; Saxton & Dollinger, 2004; Weber, 1996; Zollo & Singh, 2004). Existing literature takes into little consideration post-acquisition conduct as a mediator of the relationship between post-acquisition structure and M&A outcomes (Datta &

Grant, 1990; Grimpe, 2007; Homburg & Bucerius, 2005; Larsson & Finkelstein, 1999; Saxton & Dollinger, 2004; Weber, 1996; Zollo & Singh, 2004).

Drawing from the efficiency perspective of M&As, the structural integration of an acquired firm into an acquiring firm removes redundancy and increases operational efficiency (Datta, 1991). Drawing from the relative-standing perspective, granting autonomy to an acquired firm reduces the disruptive consequences of M&A events such as a loss of an acquired firm's social status (Hambrick & Cannella, 1993). However, it is often argued that the effects of structural integration and autonomy on M&A outcomes are established not directly but indirectly via mediating variables that represent post-acquisition conduct and reduce the ambiguity link between decisions and their performance outcomes (Cording et al., 2008).

M&As are motivated by the goals of improving economic and financial performance through post-acquisition innovation (Grimpe, 2007). In spite of the motive for M&A participation, it is often found that M&As undermine post-acquisition innovation, being substituted for internal development of innovation (Cassiman et al., 2005; Hitt et al., 1991). Some studies attempt to find the cause of poor post-acquisition innovation from the angles of organisational learning theory (Paruchuri et al., 2006; Puranam et al., 2006) and a process perspective (Grimpe, 2007; Hitt et al., 1996). These studies show that post-acquisition innovation differs depending on the choice between structural integration and autonomy (Grimpe, 2007; Hitt et al., 1996; Paruchuri et al., 2006; Puranam et al., 2006). Moreover, Capron (1999) argues that M&As are a process of organisational adaptation and organisational learning enhancing capabilities such as innovation and then producing M&A outcomes. In other words, post-acquisition innovation represents capability enhancement and acts as a mediatory cause of M&A outcomes. However, how differences in the choice of structural integration or autonomy affect post-acquisition innovation and how this subsequently affects M&A outcomes are little discussed. Therefore, this study views structural integration and autonomy as two differing post-acquisition structures that have different impacts on post-acquisition innovation and in turn M&A outcomes. Moreover, this study argues that the relationships between structural integration and autonomy and M&A outcomes can be better understood by innovation-based mediators. Therefore, this study explains how the choice between structural integration and autonomy affects post-acquisition innovation and then M&A outcomes and develops understanding of a post-acquisition mechanism of M&A success from an innovation-based perspective.

Much existing literature on post-acquisition innovation attempts to find contributors and barriers to post-acquisition innovation inside knowledge itself such as knowledge size and knowledge characteristics within resource-based theory (Cassiman et al., 2005; Makri et al., 2010) and organisational learning theory (Ahuja & Katila, 2001; Desyllas & Hughes, 2010; Kapoor & Lim, 2007; Lee & Kim, 2016; Makri et al., 2010). However, knowledge itself does not offer immediate benefits to a firm's innovation and success (Xu, 2015). Innovation is the outcomes of knowledge transfer, sharing, and combination between an acquiring and an acquired firm. In order for innovation to be better understood within the context of multinationals and inter-firm collaborations, it is essential to investigate how knowledge resources from different source locations are transferred and shared. Without account being taken of knowledge-based activities and capabilities, our understanding of post-acquisition innovation can be limited. In other words, post-acquisition innovation resides in knowledge-based mechanisms. Knowledge-based explanations about post-acquisition innovation within a cross-border M&A context are needed.

Since March (1991) introduced an exploitation and exploration paradigm, it has widely applied to post-acquisition innovation and firm performance within various theoretical foundations (Bierly et al., 2009; Stadler et al., 2014). In line with the trend, previous literature applies the exploitation-exploration paradigm to M&As (Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). An increasing number of studies examine the conditions under which exploitation and exploration innovation are driven in an M&A context (Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). However, these studies provide limited understanding of how exploitation and exploration innovation contribute to M&A and innovation performance, though exploitation and exploration are viewed as strategy and capabilities sustaining a firm's competitive advantage and prospering New Product Development (NPD) (Atuahene-Gima & Murray, 2007; Rubera et al., 2012). Further, current knowledge on how exploitation and exploration innovation are realised within knowledge-based theory is limited. In this regard, this study provides knowledge-based explanations about post-acquisition innovation in the form of exploitation and exploration innovation and their performance effects in the form of M&A and NPD performance.¹

¹ This study does not hypothesise organisational ambidexterity based on previous arguments that a firm is focused on either type of exploitation and exploration innovation due to its limited organisational resources (Voss & Voss, 2013) and conflicting requirements of exploitation and exploration innovation (Ho & Lu, 2015; Lavie et al., 2011). In support of these arguments, Stettner and Lavie (2013) find that the achievement of organisational ambidexterity within an M&A context impairs firm performance. Moreover, while innovation-based explanations about a post-acquisition mechanism of M&A success

To summarise, this study tackles the question of how post-acquisition structures affect post-acquisition innovation and then M&A and NPD performance within knowledge-based theory. That is, this study provides (1) innovation-based explanations about how structural integration and autonomy affect M&A and NPD performance via exploitation and exploration innovation and (2) knowledge-based explanations about how structural integration realises exploitation innovation, and autonomy realises exploration innovation, via knowledge-based mediators. Therefore, this study explains the roles of structural integration and autonomy in leading to M&A and NPD performance from an innovation-based perspective and the roles of the post-acquisition structures in leading to post-acquisition innovation from a knowledge-based perspective.

1.5. Theoretical Foundations

Knowledge-based theory emerges as a complementary theory tackling uncertainty about theories of the firm provided by transaction cost economics and resource-based theory (Fransson et al., 2011). Transaction cost economics, which views the existence of the firm as a result of market failure for knowledge acquisition (Almeida et al., 2002), is often used to describe the conditions for the strategic choice of an M&A entry mode (Brouthers & Brouthers, 2000). In parallel with the development of the transaction cost economics, resource-based theory, which views the existence of the firm as a unique bundle of heterogeneous resources, explains the conditions under which the firm earns superior performance (Barney, 1991). While these theories agree that knowledge is the most important of firm growth and survival, the mechanism in which knowledge is transferred, shared, and combined within a firm and across borders is little clear. Drawing from certain premises regarding the nature of knowledge and its role within a firm, knowledge-based theory is developed as an independent theoretical branch and an extension of resource-based theory.

At the heart of knowledge-based theory lies knowledge sharing between individuals (Grant, 1996a; Kogut & Zander, 1992, 1993). The need to share knowledge derives from the nature of knowledge. Extending resource-based reasoning underpinning the conceptualisation of the firm as a bundle of resources (Barney, 1991), knowledge-based theory considers knowledge as a value-creating organisational resource that is simultaneously valuable, rare, imperfectly imitable, and imperfectly substitutable and a major source of competitive advantage (Barney, 1991). Classified according to knowledge codifiability (Grant, 1996a;

and knowledge-based explanations about post-acquisition innovation are given in this study, providing organisational learning arguments about organisational ambidexterity would broaden the scope of the current study, which would likely weaken coherence in theoretical arguments.

Nonaka, 1994; Ranft & Lord, 2002), knowledge can be categorised into explicit and tacit knowledge. Explicit knowledge, which is codifiable and readily accessible through verbal communication and written documents, is easy to share between people on the one hand, but induces the likelihood of imitation by outsiders on the other hand. In contrast, tacit knowledge, which is deeply embedded in individuals in the form of habits, routines, and know-how, is difficult to codify and share. However, it is a source of casual ambiguity that contributes to competitive advantage for a firm and raises a barrier to imitation by other firms. Thus, the value of knowledge is enhanced by the effective sharing of explicit and tacit knowledge within the firm while reducing the risk of imitation by competitors.

The scholars of knowledge-based theory view the existence of the firm as the organisation of hierarchical structure that facilitates knowledge sharing among individuals. First, the firm can establish a shared identity that decreases costs associated with monitoring and controls in response to the hazards of opportunism in the case of market contracts (Grant, 1996a; Kogut & Zander, 1996). The firm provides social arrangements by which individuals effectively and consistently communicate with each other and build shared norms and culture (Kogut & Zander, 1996). Under hierarchy, individuals feel a sense of belonging and build a shared identity, which facilitate knowledge sharing among the individuals (Grant, 1996a; Kogut & Zander, 1996). Second, the central tenet of the hierarchical structure of the firm rests on the establishment of a standardised organisational system through which individuals transform their specialised knowledge at an organisational level and have access to the specialised knowledge of others (Grant, 1996a; Kogut & Zander, 1992; Nickerson & Zenger, 2004). Under a standardised organisational system within the firm, individuals have shared and unique codes that enable individuals to effectively combine newly acquired knowledge into their existing knowledge sets and create new knowledge. Using the standardised codes, individuals can effectively codify tacit knowledge into explicit knowledge and prevent imitation by competitors. By contrast, under the absence of a standardised organisational system, individuals have to make more efforts to codify and teach complex knowledge to others, which is associated with the cost of knowledge sharing. Thus, a standardised organisational system reduces the cost of knowledge codification and knowledge sharing, which becomes the rationale behind the existence of the firm and the organisation of hierarchical structure over markets.

Increasing globalisation encourages a firm to expand its economic activities such as production and manufacturing across borders, meanwhile basing a parent corporation on its national origin, which is understood as a multinational. In line with the emergence of the

multinational, knowledge-based theory extends its rationale behind the existence of the firm to the multinational and turns its attention to transfer modes that realise efficiency in knowledge sharing across borders (Kogut & Zander, 1993; Szulanski, 1996). From knowledge-based theory, a multinational, which builds a standardised organisational system through which local knowledge in multiple locations is transferred from one country to another and exploited in a new setting (Almeida et al., 2002; Gupta & Govindarajan, 2000), is a more efficient governance mode of knowledge sharing across borders than markets (Almeida et al., 2002; Gupta & Govindarajan, 1991; Kogut & Zander, 1993).

Under the hierarchy of the multinational, it creates knowledge in its home base and transfers it in the form of products and services to local subsidiaries. Beyond this traditional flow of knowledge transfer, a recent multinational functions as an international system through which its local subsidiaries engage in upstream activities such as R&D and share innovation outputs within their parent corporation. Thus, the traditional flows of intra-firm knowledge transfer from a parent corporation to local subsidiaries have been changed in multiple and dyadic ways, mainly exhibiting the following three ways (Mudambi & Navarra, 2004; Zhao & Luo, 2005): (1) transfer from a parent to subsidiaries, which is a traditional flow of the parent's home-based knowledge advantages into the subsidiaries, and (2) transfer from the subsidiaries to the parent, which enables the parent to exploit the local knowledge of the subsidiaries and internalise it for wider application, and (3) transfer between the local subsidiaries, which receives increasing attention as learning opportunities facilitating collaboration between peer subsidiaries and reducing transaction costs that would incur by knowledge acquisition from markets.

Acknowledging a parent corporation and its local subsidiaries as a sender as well as a recipient of knowledge across borders (Mudambi & Navarra, 2004; Zhao & Luo, 2005), previous literature attempts to explain what determines and hinders knowledge sharing between these economic actors (Fang et al., 2010; Gupta & Govindarajan, 2000; Noorderhaven & Harzing, 2009; Perez-Nordtvedt et al., 2008). Previous literature attributes knowledge sharing across borders to a recipient's motivation for learning and the attractiveness of senders' knowledge (Fang et al., 2010; Gupta & Govindarajan, 2000; Noorderhaven & Harzing, 2009; Perez-Nordtvedt et al., 2008), a recipient' absorptive capacity (Gupta & Govindarajan, 2000), workflow integration (Noorderhaven & Harzing, 2009), and knowledge-sharing mechanisms between senders and recipients (Gupta & Govindarajan, 2000; Noorderhaven & Harzing, 2009).

First, a recipient's motivation for learning is of significance determining effective knowledge sharing (Gupta & Govindarajan, 2000; Perez-Nordtvedt et al., 2008). A lack of a recipient's motivation for learning the knowledge of a sender hinders knowledge sharing, while a recipient's strong motivation for learning and leveraging the knowledge speeds up the process of internationalisation of knowledge throughout a firm (Perez-Nordtvedt et al., 2008). A recipient's intention to learn a sender's knowledge becomes stronger when the sender holds attractive knowledge (Noorderhaven & Harzing, 2009). When a sender is relatively larger and located in a more advanced economic country than a recipient, the sender is likely to have a greater pool of advanced technology and marketing capabilities. Thus, the large size of a sender and the advanced economy of its home country stimulate a recipient to seek and learn the knowledge of the sender and the sender to share its competitive advantage (Fang et al., 2010; Gupta & Govindarajan, 2000; Perez-Nordtvedt et al., 2008). Second, a recipient's absorptive capacity, which is "abilities to recogni[s]e the value of new information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal, 1990, p. 128), is another determinant of knowledge sharing. When a recipient lacks absorptive capacity, which is largely a function of common knowledge between a sender and a recipient, the recipient cannot fully absorb and exploit the knowledge of its sender (Szulanski, 1996). Third, under workflow integration in which a parent and local subsidiaries increase task interdependence, products and materials are shared between the parent and local subsidiaries. Because products and materials are closely tied to knowledge, physical flows between a parent and local subsidiaries are related to knowledge flows (Noorderhaven & Harzing, 2009). Finally, empirical literature on knowledge sharing within a multinational pays great attention to knowledge-sharing mechanisms. Formal mechanisms such as liaison personnel, task forces, and permanent committees (Gupta & Govindarajan, 2000) are used to convert tacit knowledge into explicit knowledge and make it widely accessible by the individuals within the multinational. Moreover, formal mechanisms contribute to the standardisation of information systems and the directions of knowledge transfer, which in turn economises on knowledge sharing (Grant, 1996a). Informal mechanisms such as social events that build interpersonal familiarity (Gupta & Govindarajan, 2000) are means of the direct involvement of individuals in the sharing of lower-level knowledge (Grant, 1996a), accommodating the depth and richness of communication between a parent and its local subsidiaries (Noorderhaven & Harzing, 2009). Thus, the sharing of firm-specific knowledge bases within a networked hub of geographically and culturally dispersed subsidiaries can reduce costs associated with monitoring and controls and facilitate knowledge sharing.

It is widely accepted that knowledge sharing within a single firm in which individuals establish a shared identity and share knowledge in accordance with a standardised organisational system is more efficient than knowledge sharing between firms (Grant, 1996a; Nahapiet & Ghoshal, 1998). Because the firms do not have what a single firm can benefit from. However, the replication and utilisation of existing knowledge within the same firm become limited owing to individuals' bounded rationality (Anand, 2004; Szulanski, 1996). Thus, a firm reduces the danger of being locked out of future innovation and get out of a competency trap, participating in cross-border M&As, where an acquiring firm can exercise tight control over an acquired firm while obtaining new knowledge of the acquired firm (Ranft & Lord, 2002). In other words, within cross-border M&As, an acquiring and acquired firm can build a shared identity and a shared organisational system and have access to the knowledge of the other firm that enables them to overcome organisational rigidity (Junni et al., 2015; Karim & Mitchell, 2000). Thus, an acquiring firm can enjoy knowledge-based advantages that knowledge sharing within the same set of organisational boundaries brings about and knowledge sharing across organisational boundaries and borders brings about (Ranft & Lord, 2002).

Knowledge-based theory has evolved, incorporating the conceptualisation of exploitation and exploration from March (1991) (Bierly et al., 2009; Im & Rai, 2008; Xu, 2015). Under the exploitation approach, an acquiring and acquired firm focus on the leveraging of their existing knowledge in a way that produces efficiency and incremental improvements in existing products (i.e., exploitation innovation) (Bierly et al., 2009; Im & Rai, 2008). In contrast, under the exploration approach, an acquiring and acquired firm pursue new insights and ideas that are deviated from their existing knowledge bases as the source of experimentations and to develop new products (i.e., exploration innovation) (Bierly et al., 2009; Im & Rai, 2008). Accordingly, the exploitation approach is applied in pursuit of reconfiguring and improving existing knowledge bases and realising product extensions. In contrast, the exploration approach is applied in pursuit of fostering significant improvements in existing knowledge bases and product offerings. This distinction between exploitation and exploration innovation within knowledge-based theory emphasises M&As as a vehicle of leveraging and learning the existing knowledge bases of a partner firm.

In summary, knowledge-based theory views the existence of the firm as a result of difficulty in transferring, sharing, and combining knowledge due to its tacit nature, individuals' bounded rationality, and the possibility for opportunism in markets. Moreover, the theory attributes the existence of the firm to the organisation of hierarchical structure under which individuals can establish a shared identity supporting effective knowledge sharing and the firm

can offer a standardised organisational system speeding and economising on knowledge sharing. Thus, the firm provides a social community structured by organising principles by which the flows of knowledge transfer are structured and knowledge sharing is facilitated (Kogut & Zander, 1996).

While the traditional knowledge-based theory of the firm limits the rationale about the existence of the firm to the efficiency of hierarchy, the theory of the multinational acknowledges its governance structure across local subsidiaries promoting the multiple flows of knowledge transfer: (1) the vertical downward transfer of knowledge from a parent corporation to local subsidiaries; (2) the vertical upward transfer of knowledge from the subsidiaries to the parent corporation; and (3) the horizontal transfer of knowledge between the local subsidiaries. In accordance with an increasing trend towards market expansion across national boundaries and geographical diversification, the knowledge-based theory of the multinational investigates the barriers to and the conditions of effective knowledge sharing across borders. It pays attention to a sender's motivation for sending its knowledge and a recipient's motivation for learning it, a recipient's absorptive capacity, workflow integration, and knowledge-sharing mechanisms between a sender and a recipient as a determinant of knowledge sharing across organisational boundaries and borders.

Cross-border M&As benefit an acquiring and acquired firm, allowing them to have access to knowledge developed outside their typical knowledge-creation mechanisms and overcome organisational rigidity. Moreover, cross-border M&As allow the acquiring and acquired firm to build a shared identity and a standardised organisational system and effectively share knowledge with each other. Thus, understanding of cross-border M&As within knowledge-based theory has great potential. Moreover, expanding exploitation and exploration innovation along knowledge-based theory, literature can widen the application of knowledge-based theory and provide richer understanding of post-acquisition innovation.

1.6. Purpose and Significance of the Research

This study aims to shed light on how the post-acquisition structures of structural integration and autonomy affect post-acquisition innovation and then M&A and NPD performance within knowledge-based theory with the following objectives:

- (1) To provide explanations about the mediating roles of exploitation innovation and exploration innovation in the relationships between structural integration and autonomy and M&A performance and NPD performance;

(2) To examine the mediating roles of knowledge transfer and knowledge sharing in the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

The above objectives are achieved by answering the following research question: How does post-acquisition structure affect M&A outcomes?

By answering the research question and addressing the research aim and objectives, this study contributes to existing knowledge and literature in the following ways. First, this study advances our understanding of a post-acquisition mechanism of M&A success from an innovation-based perspective. This study examines a post-acquisition mechanism of how structural integration and autonomy affect post-acquisition innovation and then M&A and NPD performance. Existing literature limits its analysis on the direct effects of structural integration and autonomy on M&A outcomes from the efficiency perspective of M&As (Datta, 1991) and the relative-standing perspective (Hambrick & Cannella, 1993) respectively (Sinkovics et al., 2015; Zollo & Singh, 2004). However, structural integration and autonomy serve as a context of shaping post-acquisition conduct and then producing performance effects. In other words, structural integration and autonomy affect M&A outcomes not directly but indirectly through mediating variables that explain post-acquisition conduct (Cording et al., 2008) such as post-acquisition innovation (Capron, 1999). In this regard, this study builds mediating models that explain the effects of structural integration and autonomy on M&A and NPD performance via innovation-based mediating variables, in particular exploitation and exploration innovation.

In seeking to provide innovation-based explanations about a post-acquisition mechanism of M&A success, this study finds that exploitation innovation mediates the relationship between structural integration and M&A and NPD performance. The findings confirm a need to construct a mediating variable to translate into performance outcomes from post-acquisition structure. Moreover, this study observes that structural integration is appropriate post-acquisition structure permitting an acquiring and acquired firm to improve post-acquisition innovation and then produce superior M&A and NPD performance. Therefore, building from innovation-based mediating mechanisms, this study shows that structural integration is a key to unlocking M&A and NPD performance. The choice of post-acquisition structure appropriate for post-acquisition innovation is essential for M&A success. Therefore, this study contributes to existing knowledge on the innovation-based understanding of the

role of structural integration in improving M&A and NPD performance and a post-acquisition mechanism of M&A success.

Second, this study explores post-acquisition innovation within knowledge-based theory. Post-acquisition innovation is derived from the transfer, sharing, and combination of the existing knowledge of an acquiring and acquired firm. However, much literature attempts to explain the conditions for post-acquisition innovation within resource-based theory (Cassiman et al., 2005) and organisational learning theory (Ahuja & Katila, 2001; Desyllas & Hughes, 2010). Moreover, the relevant literature implicitly assumes that the possession of large, similar, and complimentary knowledge of an acquiring and acquired firm leads to innovation without direct evidence of knowledge-based activities and capabilities (Ahuja & Katila, 2001; Cassiman et al., 2005; Desyllas & Hughes, 2010). That is, post-acquisition innovation needs knowledge-based explanations. Thus, this study addresses the issue of post-acquisition innovation, investigating the mediating roles of the knowledge-transfer activities and knowledge-sharing capabilities of an acquiring and acquired firm in the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

The transfer of knowledge resources from an acquiring firm to an acquired firm and their capability to share knowledge enable structural integration to realise exploitation innovation. The findings offer knowledge-based conditions under which structural integration realises exploitation innovation and show that knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing are the mediatory causes boosting exploitation innovation. Moreover, the findings show that structural integration is a stimulus to post-acquisition innovation, in contrast to the perspective of organisational learning theory on structural integration as an impediment to post-acquisition innovation (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). Thus, this study sheds new light on the role of structural integration in promoting post-acquisition innovation within knowledge-based theory and contributes to existing literature on post-acquisition innovation within knowledge-based theory.

Third, building from the conceptualisation of March's (1991) exploitation and exploration paradigm, this study examines post-acquisition innovation. This study explores how differences in the choice of post-acquisition structure between structural integration and autonomy affect the way in which an acquiring and acquired firm realise exploitation innovation or exploration innovation. This study argues that in cross-border M&As employing structural integration, an acquiring and acquired firm arrange their activities and systems in an

efficient way that fosters exploitation innovation. In contrast, in cross-border M&As employing autonomy, an acquiring and acquired firm arrange their activities and systems in a flexible way that fosters exploration innovation. The arguments regarding the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation are developed in the hypotheses development chapter (Chapter 3, Section 3.3.1.1).

This study finds that structural integration positively affects M&A and NPD performance through exploitation innovation and realises exploitation innovation through knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing. The findings show that exploitation innovation is the driver of superior M&A and NPD performance. Structural integration requires an acquiring firm to transfer its knowledge resources to an acquired firm and share knowledge with it to derive exploitation innovation. Therefore, these findings show that structural integration is an appropriate choice of post-acquisition structure realising exploitation innovation and then improving M&A and NPD performance. Structural integration is efficiency-oriented structure leading to knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing and then realising exploitation innovation. Thus, this study contributes to existing knowledge on the roles of structural integration in improving M&A and NPD performance from an innovation-based perspective and the role of structural integration in generating exploitation innovation from a knowledge-based perspective.

Finally, this study provides empirical evidence on M&A outcomes from the measures of M&A performance as well as NPD performance. As most of existing studies on M&As assess M&A outcomes by the finance and market performance of M&As such as returns on investment, sales growth, and sales volumes (Ambrosini et al., 2011; Schoenberg, 2004), this study does so. Additionally, this study evaluates M&A outcomes by the successfulness of NPD performance. This is because M&As can be driven by an acquiring firm with the desire not only to achieve superior returns and profits but to improve innovation and therefore to enhance the acquiring firm's performance and survival (Chen et al., 2010; Colombo & Rabbiosi, 2014). In spite of this, existing literature significantly relies on patent data (Ahuja & Katila, 2001; Hitt et al., 1991; Makri et al., 2010) and R&D expenditure (Desyllas & Hughes, 2010) as a proxy for improvements in post-acquisition innovation and takes into little consideration its performance (c.f., Chen et al., 2010; Colombo & Rabbiosi, 2014). From this point of view, this study assesses the performance of post-acquisition innovation based on NPD performance and considers improvements in NPD performance as successful M&As. As a result, this study observes that the findings of NPD performance are parallel to those of M&A performance. Specifically, structural integration enables an acquiring and acquired firm to attain superior

M&A performance as well as NPD performance through exploitation innovation. Assessing M&A outcomes by M&A performance and NPD performance measures, this study provides richer insights into M&A success from the perspectives of not only M&A performance but also NPD performance and contributes to existing knowledge on the performance of post-acquisition innovation.

To summarise, this study finds that M&A success rests on structural integration and post-acquisition innovation. Structural integration enables an acquiring and acquired firm to reap successful M&A outcomes from the realisation of exploitation innovation and permits the firms to realise exploitation innovation through the transfer of knowledge resources from the acquiring firm to the acquired firm and the sharing of knowledge between them. Therefore, this study shows how the choice of structural integration affects post-acquisition innovation and subsequently M&A and NPD performance and develops knowledge-based understanding of exploitation innovation. That is, this study suggests an integrative framework of a post-acquisition mechanism of M&A success, constructing innovation-based mechanisms in which structural integration leads to M&A and NPD performance via exploitation innovation and knowledge-based mechanisms in which structural integration leads to exploitation innovation via knowledge transfer and knowledge sharing. Therefore, this study contributes to exiting knowledge on post-acquisition innovation and cross-border M&As from an innovation-based perspective and a knowledge-based perspective.

1.7. Research Methodology

This study was based on quantitative methodology and a survey method to make generalisation about findings from samples to a population and capture respondents' perceptions of facts, behaviour, and activities that cannot be attained by archival sources. Designing a survey in an online-format, this study achieved cost-efficiency and time-efficiency in developing and sending the survey and receiving responses. Moreover, designing the survey in a cross-sectional form, this study was able to conduct rigorous data analysis and enhance the variation and generalisability of research findings.

Survey questions determine survey response rates and the presence of common method variance. Therefore, survey questions must be developed with great caution. The survey questions of the survey were constructed at a closed-question format to help respondents easily and quickly complete the survey. Moreover, the survey questions were developed as clearly and concisely as possible to avoid item ambiguity and complexity. The survey questions were well-organised with opening, middle, and ending questions, giving

respondents an impression that the survey was professional. Asking topic-related questions, the survey minimised respondents' discomfort and confusion in answering the questions.

Before inviting potential respondents to the survey, it was pilot tested by academics and amended according to their feedback in April and May 2015. The data-collection process started in June 2015, sending a pre-notification a week before sending out a survey link and two subsequent reminders at two intervals of two weeks afterwards. Therefore, the whole process of data-collection from conducting the pilot study to sending the survey link and two survey reminders occurred between April 2015 and December 2015.

The survey was sent to those UK acquiring firms who purchased a non-UK acquired firm between January 2012 and July 2015 with a 100% full equity stake. This time frame was chosen to comprehend the most recent cross-border M&A trends, prevent the loss of memory of respondents, and reduce their burden of recalling an old M&A event completed long time ago. Moreover, the survey was distributed to the acquiring firms and their senior-level managers who were most likely to get engaged in their M&A decisions and post-acquisition conduct and could provide accurate impression and perspectives on their M&A outcomes. Out of 593 firms, 143 responses were collected, representing a response rate of 24.1%. Based on the survey data collected, a hypothesised model developed for this study was tested on using multiple regression analysis and with the use of the PROCESS macro in SPSS. The latter was used specifically in the evaluation of indirect effects.

1.8. Outline of Chapters

The rest of this research has been organised in the following way. Chapter 2 reviews previous literature on the determinants of M&A performance in accordance with a pre-acquisition process and a post-acquisition process and discusses contribution and limitations of the previous literature. Extending the review, this study focuses on reviewing previous literature on post-acquisition specifically structural integration and autonomy, knowledge transfer and knowledge sharing, and post-acquisition innovation. Consequently, this study identifies research gaps in existing knowledge on post-acquisition and develops what it intends to study.

This study observes that a good deal of previous literature views pre-acquisition conditions such as knowledge similarity and complementarity (Ahuja & Katila, 2001; Makri et al., 2010) and cultural differences (Slangen, 2006) as the indicators of the potential for innovation and synergy creation. However, it is a post-acquisition process in which an acquiring and acquired firm engage in post-acquisition conduct and reap M&A outcomes. In

line with a trend among recent studies towards a shift from the pre-acquisition conditions of M&A success to the post-acquisition conditions, this study develops a post-acquisition mechanism of M&A success. Specifically, reviewing previous literature on this study finds research gaps that need further investigation.

Chapter 3 develops hypotheses, drawing from the rationale behind knowledge-based theory and previous arguments from a verity of previous literature mainly on M&As, cross-border M&As, and post-acquisition innovation. Thus, this study constructs six hypotheses on the mediating effects of exploitation and exploration innovation on the relationships between structural integration and autonomy and M&A and NPD performance and the mediating effects of knowledge transfer and knowledge sharing on the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

Chapter 4 contains a detailed description of methodology from discussions on philosophical foundations of research, research strategy, sampling frames, data collection procedure, and data analysis. Discussing ontological and epistemological assumptions underpinning the subsequent selection of research methodology and method, this study reached a decision on 'positivism' from a standpoint of a philosophical paradigm. Based on the assumptive sets underlying this philosophical position, this study chose quantitative methodology and a survey method. Along with the choice of survey, chapter 3 gives explanations about the choice of survey method form, survey design, and survey questions development including measures, items, and sources.

Selecting the UK as a research setting, chapter 3 describes sampling design, a process of drawing a sample, and sample size. Moreover, this chapter discusses how the survey was conducted, giving response rates and a description about the characteristics of respondent firms. Finally, chapter 3 explains how to ensure the validity and reliability of sample data and what statistical techniques were adopted.

Chapter 5 confirms the validity and reliability of same data, describing the empirical results of non-response bias, factor analysis (i.e., exploratory factor analysis and confirmatory factor analysis), common method variance, and discriminant validity. Subsequently, the chapter provides the empirical results of mediation tests conducted on the hypotheses developed for this study.

Chapter 6 presents an in-depth investigation of the implications of research findings, generalising them and grasping their wider meanings. As with the expected findings, this

chapter explains how the findings are consistent with previous findings and arguments. As with the unexpected findings, this chapter discusses and evaluates alternative explanations of the findings. This chapter ends up, explaining theoretical contributions made to existing knowledge and literature on cross-border M&As.

Chapter 7 summarises its research aim, objectives, research findings, and the theoretical contributions of this study and discusses the managerial implications of the findings, limitations of the current study, and recommendations for future research.

Chapter 2: Literature Review

2. Literature Review

Along with the growing value of cross-border M&As during the last decade, they have become increasingly a common entry mode and business strategy among firms seeking international expansion and improving their organisational performance. In spite of the apparent popularity of cross-border M&As, they suffer from high failure rates, which typically are reported to be between 40% and 60% (Child et al., 1999; Schoenberg, 2006). Responding to such a paradox to the popularity of the entry mode, numerous studies have attempted to explain what determines cross-border M&A success and what consequences it brings. In this chapter, I review previous literature on M&As in general and identify research gaps on which this study is based.

2.1. Cross-Border M&As

Cross-border M&As are advantageous to an acquiring firm, enabling it to have access to new and complementary knowledge and resources beyond its geographical boundary and expand its operations on a more efficiency scale (Anand & Delios, 2002; Buckley et al., 2016). Further, cross-border M&As help an acquiring firm overcome the self-reinforcing nature of its existing knowledge and resources and achieve cost-saving effects at the same time (Bertrand & Capron, 2015). Thus, an acquiring firm participates in cross-border M&As to produce innovations (Bauer et al., 2016), synergy (Brock, 2005), and superior M&A performance (Markides & Ittner, 1994; Sinkovics et al., 2015; Weber, 1996). However, cross-border M&As become more ambiguous and complex as they do not represent only the combination of two independent firms but also feature the phenomenon of inter-firm collaborations across borders. That is, specific routines and repertoires, which reside in a firm's unique institutional and cultural environment (Morosini et al., 1998), are concerned with the way in which two firms collaborate such as knowledge transfer (Bresman et al., 2010), knowledge sharing (Vaara et al., 2012), and post-acquisition innovation (Bauer et al., 2016) and affect M&A performance in the end (Markides & Ittner, 1994; Sinkovics et al., 2015).

Acknowledging the trends towards business consolidation and geographical diversification through cross-border M&As, previous literature on cross-border M&As widens the spectrum of the predictors of M&A performance particularly at a transaction-level (Bertrand & Capron, 2015) and at a country-level (Morosini et al., 1998). For example, Bertrand and Capron (2015) discuss the productivity of acquiring firms participating in cross-border M&As. A group of scholars examine the effects of cultural differences between an acquiring firm's home country and an acquired firm's host country on M&A performance

(Chatterjee et al., 1992; Morosini et al., 1998; Reus & Lamont, 2009). With this in mind, I will study previous literature on M&A performance in general and advance our understanding of what affects M&A performance.

2.1.1. M&A Performance

Synergy, which is a greater value when two firms are combined than the total value of the individual firms (Seth, 1990), is the most common justification for M&A participation (King et al., 2004). Previous literature on M&As argues that synergy creation, which reflects the economic and financial performance of M&As (Stahl & Voigt, 2008) is a function of the combination of two previous independent firms (Larsson & Finkelstein, 1999). Synergy is not a singular construct but can take generally four different forms within the strategic management area (Capron, 1999; Markides & Ittner, 1994; Rahman & Lambkin, 2015 Seth, 1990): (1) cost-based synergy in operation, production, and administration, that is economies of scale; (2) revenue-based synergy by increases in new products and market portfolios; (3) collusive synergy, which is market power synergy by the reduction of competition intensity and increases in entry barrier; and (4) finance synergy, which is coinsurance effects where a firm's income stream is stabilised and its return variances are reduced. As synergy creation is often intertwined with the issues surrounding the conditions under which successful M&As are driven, scholars of M&As pay much attention to identifying the factors that represent synergistic opportunities inherent M&As and improve M&A performance (Capron, 1999; Schoenberg, 2004; Markides & Ittner, 1994). Table 2.1 briefly summarises the factors that are brought identified in previous literature on M&As in accordance with a pre-acquisition process and a post-acquisition process.

Table 2. 1 Determinants of M&A Performance and Corresponding References

School of Thought	Analysis Levels	Pre-Acquisition Process	Post-Acquisition Process	References
Strategic Management	Transaction Levels	Cross-Border M&As		Bertrand & Capron (2015) Ning et al. (2014)
		M&A Approach		Datta et al. (1992)
		Number of Bidders		Datta et al. (1992)
		Method of Payment		Datta et al., (1992) Carow et al. (2004)
		M&A Type (Related M&As VS. Unrelated M&As)		Bergh (1997) Carow et al. (2004) Lin (2014) Markides and Ittner (1994) Seth (1990)
		Diversification		Anand & Singh (1997) Markides & Ittner (1994)
Strategic Management	Firm Levels	Attitudes of Acquiring Firms towards M&As		Sudarsanam & Mahate (2006)
		Resource Strength of Acquiring Firms		Buckley et al. (2014)
		State Ownership of Acquired Firms (State-Owned Acquired Firms VS. Non-State Owned Acquired Firms)		Jory & Ngo (2014)
Organisational Behaviour		Previous Experience of Acquiring Firms		Almor et al. (2014) Basuil & Datta (2015)

				Buckley et al. (2014) Ellis et al. (2011) Kling et al. (2014) Markides & Ittner (1994) Meschi & Metais (2015) Nadolska & Barkema (2014) Vermeulen & Barkema (2001)
Strategic Management			Top Management Turnover of Acquired Firms	Kiessling et al. (2012) Krishnan et al. (1997) Saxton & Dollinger (2004) Zollo & Singh (2004)
Organisational Behaviour			Acquired Employees' Reaction	Larsson & Finkelstein (1999)
Strategic Management	Inter-Firm Level	Strategic Similarity		Capron et al. (2001) Saxton & Dollinger (2004)
		Knowledge Complementarity		King et al. (2008) Larsson & Finkelstein (1999) Sears & Hoetker (2014)
		Strategic Complementarity		Bauer & Matzler (2014) Harrison et al. (1991) Kim & Finkelstein (2009)
		Firm Size		Arvanitis & Stucki (2015)
		Third-Party Connections		Rogan & Sorenson (2014)
			Changes in Acquired Firm's Management Practices	Child et al. (1999)

			Autonomy	Datta & Grant (1990) Lin (2014) Weber (1996) Very et al. (1997)
			Structural Integration	Cording et al. (2008) Homburg & Bucerius (2005) Lin (2014) Saxton & Dollinger (2004) Sinkovics et al. (2015) Zollo & Singh (2004)
Strategic Management			Structural Integration Speed	Bauer & Matzler (2014) Cording et al. (2008) Homburg & Bucerius (2005) Homburg & Bucerius (2006) Sinkovics et al. (2015)
			Knowledge Transfer	Ahammad et al. (2016) Capron (1999) Capron & Pistre (2002) Reus et al. (2016)
			Knowledge Sharing	Brock (2005)
M&A Process			Structural Integration Human Integration	Birkinshaw et al. (2000) Ellis et al. (2009) Larsson & Finkelstein (1999)

Organisational Behaviour		Organisational Fit (i.e., similarity in organisational culture, systems, and practices)		Ahammad et al. (2016) Bauer & Matzler (2014) Datta (1991) Ramaswamy (1997) Saxton & Dollinger (2004) Schoenberg (2004) Stahl & Voigt (2008)
Organisational Behaviour	Industry Levels	Industry Similarity		Finkelstein & Haleblian (2002)
Strategic Management		Industry Acquisition Waves		Carow et al. (2004)
Organisational Behaviour	Country Levels	Cultural Differences between Home Country and Host Country		Brock (2005) Chatterjee et al. (1992) Dikova & Sahib (2013) Reus & Lamont (2009): Slangen (2006) Stahl & Voigt (2008) Very et al. (1996)
Strategic Management		Cultural Differences between Home Country and Host Country		Morosini et al. (1998)
		Institutions of Host Country		Du & Boateng (2015)

Previous literature on M&As features the following three distinguishable points. First, existing literature on M&As has been well-established majorly by two schools of thought. The most prominent stream in the research field is strategic management school (Datta et al., 1992), who has contributed to the discovery of the factors that have remained relatively unexplored across a wide range of analysis levels. Additionally, organisational behaviour school examines behavioural outcomes (Finkelstein & Halebian, 2002), advancing the understanding of M&A phenomenon from the behavioural perspectives of an acquiring and acquired firm and their employees at the firm (Nadolska & Barkema, 2014), inter-firm (Datta, 1991), and country level (Stahl & Voigt, 2008). It is interesting to observe that a body of previous literature on M&As explains how tasks are dealt with between an acquiring and acquired firm from the combined perspectives of strategic management and organisational behaviour beyond reliance on a single theoretical area. This branch is developed as 'a process perspective' (Jemison & Sitkin, 1986).

Another noticeable characteristic identified in previous literature is that there has been fine-grained analysis at five different levels. As M&As produce superior outcomes when an acquiring and acquired firm collaborate, the inter-firm level is the dominant analysis level discussed in previous literature (Capron, 1999; Capron & Pistre, 2002). However, the industry level is the least discussed analysis level (Carow et al., 2004; Finkelstein & Halebian, 2002). This may be because industry effects are much reflected in the transaction-level factors of M&A types and diversification (McWilliams & Smart, 1993; Singh & Montgomery, 1987), the conceptualisation of which is structured incorporating the structural characteristics of an acquiring firm's and an acquired firm's industry (McWilliams & Smart, 1993).

Finally, M&As are generally divided into a pre-acquisition process and a post-acquisition process on a basis of the moment when an M&A event is completed. Much scholastic attention has been paid to the issues of a pre-acquisition process (Carow et al., 2004; Datta et al., 1992). This is because during a pre-acquisition process, an acquiring firm evaluates potential synergistic benefits and proactively designs strategies to adapt themselves to their new environments, taking into consideration its internal and external conditions. However, it is the post-acquisition process in which an acquiring and an acquired firm are actually combined, and M&A performance is determined. Identifying a need to uncover the factors that actually realise synergy, a growing number of studies address post-acquisition issues (Cording et al., 2008; Larsson & Finkelstein, 1999). Accordingly, this study reviews previous literature on M&As, separating a post-acquisition process and a pre-acquisition process from each other.

2.1.1.1. Pre-Acquisition

During a pre-acquisition process, which is the stage before M&A completion, an acquiring firm searches and screens a potential acquired firm and evaluates potential synergy that would be created by a possible combination of the acquired firm with its own operations. A lack of planning of M&As can be the cause of high payment of excessive premiums and integration problems and therefore lead to M&A failure. Thus, previous literature addressing the issues of a pre-acquisition process is focused on reducing the danger of overpayment (Datta et al., 1992) and maximising synergy effects (Markides & Ittner, 1994).

At the transaction level, where the analysis is focused on M&A events themselves, strategic management scholars analyse the characteristics of M&A events such as M&A approaches, the number of bidders, and payment method (Datta et al., 1992). According to Datta et al. (1992), a tender offer, which asks a target firm's shareholders to decide whether or not to tender their shares to a bidding firm, and multiple bidders can create more value from the perspective of an acquired firm (Datta et al., 1992). This is because the announcement of a tender offer and a number of bidders increase competition and result in increases in bid premiums and favourable post-acquisition contracts for an acquired firm. Moreover, payment method signals the presence of an acquiring firm's information asymmetry or informational advantages (Carow et al., 2004). In M&As where an acquiring firm is uncertain about the true value of a target firm, the acquiring firm purchases the target firm with stock. In contrast, in M&As where an acquiring firm possesses informational advantages that can produce higher expected outcomes, the acquiring firm purchases a target firm with cash (Carow et al., 2004). Therefore, Datta et al. (1992) and Carow et al. (2004) find that stock-financed M&As, where an acquiring firm shares uncertainty about the presence of information asymmetry with a target firm's shareholders, impair M&A performance for both an acquiring and acquired firm. In contrast, cash-financed M&As, where an acquiring firm signals the possession of informational advantages, can reduce competitive offers and create benefit both an acquiring and acquired firm (Carow et al., 2004; Datta et al., 1992). Therefore, M&A performance can be predicted by the way in which an acquiring firm approaches an M&A event, the number of bidders that get involved in a bid, and a method by which an acquiring purchases an acquired firm.

The most widely applied element at the transaction-level is M&A types classified in accordance with the existence of industry commonality between an acquiring and an acquired firm (Bergh, 1997; Carow et al., 2004; Lin, 2014; Markides & Ittner, 1994; Seth, 1990) and diversification (Anand & Singh, 1997; Markides & Ittner, 1994). M&As of an acquiring and

acquired firm in the same industry are categorised as 'related M&As' and 'consolidation-oriented M&As', while M&A firms in different industry are categorised as 'unrelated M&As' and 'diversification-oriented M&As' (Anand & Singh, 1997; Seth, 1990). Under related M&As and consolidation-oriented M&As, an acquiring and acquired firm expect increases in efficiency by removing redundancy and transferring and sharing similar and complementary resources and capabilities (Anand & Singh, 1997; Markides & Ittner, 1994; Seth, 1990). While related acquisitions and consolidation-oriented M&As are perceived as a means of operational efficiency, unrelated M&As and diversification-oriented M&As are chosen as risk-spreading strategy generating finance synergy where the firms' income stream is stabilised and its return variances are reduced (Anand & Singh, 1997; Markides & Ittner, 1994; Seth, 1990). Perceiving related M&As and consolidation-oriented M&As as synergy-rich and unrelated M&As and diversification-oriented M&As as synergy-poor (Galbraith & Stiles, 1984), long-stranding theoretical contention that unrelated M&As and diversification-oriented M&As do not generally offer performance advantages when compared to related M&As and consolidation-oriented M&As has been considered widely accepted. Consistent with the widely accepted contention, a great number of previous studies find that related M&As produce superior M&A performance (Carow et al., 2004; Lin, 2014; Markides & Ittner, 1994) and higher returns and more values than unrelated acquisitions (Anand & Singh, 1997; Flanagan, 1996; Shelton, 1988; Singh & Montgomery, 1987). However, some previous studies reveal that related M&As are no better than unrelated M&As (Seth, 1990) and insignificantly associated with M&A performance (King et al., 2004).

The conflicting results of the effects of related and unrelated M&As on M&A performance are often attributed to the inappropriate choice of post-acquisition structure between structural integration and autonomy (Datta & Grant; 1990; Lin, 2014). Datta & Grant (1990) contend that post-acquisition structure determines the effects of different types of M&As on their performance. They show that under autonomy, unrelated M&As display improved M&A performance, but related M&As are insignificantly associated with M&A success. Moreover, Lin (2014) show that in unrelated M&As, structural integration is negatively associated with M&As, whereas in related M&As, structural integration is positively associated with M&A performance. In this regard, it can be argued that superior M&A performance is driven by employing appropriate post-acquisition structure in line with the type of M&As that an acquiring and acquired firm engage in. The issues of post-acquisition structure await further discussion in Section 2.1.2.1.

At a firm-level, where the analysis predicts M&A success from the characteristics of either an acquiring firm or an acquired firm, strategic management school captures an acquiring firm's attitude towards M&As (Sudarsanam & Mahate, 2006), an acquiring firm's resource strength (Buckley et al., 2014), and an acquired firm's state ownership (Jory & Ngo, 2014) as the determinants of M&A performance. In addition to the strategic factors that maximise M&A benefits, organisational behaviour school studies performance effects generated by an acquiring firm's previous experience (Almor et al., 2014; Basuil & Datta, 2015; Buckley et al., 2014; Ellis et al., 2011; Kling et al., 2014; Markides & Ittner, 1994; Nadolska & Barkema, 2014; Vermeulen & Barkema, 2001).

When it comes to the firm-level factors from a strategic management perspective, literature shows that a hostile acquiring firm (Sudarsanam & Mahate, 2006), an acquiring firm with abundant tangible resources (Buckley et al., 2014), and the state ownership of an acquired firm (Jory & Ngo, 2014) can produce superior M&A performance. To begin with, Sudarsanam and Mahate (2006) argue that a hostile acquiring firm creates more value than a friendly acquiring firm and provide evidence supporting their argument. Their argument is inconsistent with a widely accepted view that hostile M&As, where an acquiring firm provides an acquired firm's shareholders with an offer to sell their shares without the acquired firm's content, underperform friendly M&As, where an acquiring and acquired firm agree about certain legal and technical requirements (Muehlfeld et al., 2012). According to the scholars, this is because a hostile acquiring firm buys a poorly performing acquired firm at a relatively low cost and replaces its incumbent management. Therefore, the hostile acquiring firm can generate long-run returns. In contrast, a friendly acquiring firm, which aims to seize synergistic opportunities by the integration with an acquired firm's operation, needs acquired management's cooperation. The friendly acquiring firm tends to pay high premium while negotiating with the potential acquired firm's management and high indirect cost due to the retention of the inefficient incumbent management. Moreover, Buckley et al. (2014) argue that an acquiring firm with a good deal of tangible resources such as cheap capital can increase the likelihood of M&A success. By sharing an acquiring firm's strong resources with an acquired firm and receiving its advanced marketing and R&D knowledge and resources, the acquiring firm can complement its resource weakness and produce superior M&A performance.

According to Jory and Ngo (2014), a host country's government privatisation can influence an acquiring firm's M&A entry and post-acquisition conduct in that host country. In weak economic, legal, and business environments, achieving government support such as

capital from state-owned banks is essential for M&A performance. By acquiring a state-owned acquired firm, an acquiring firm can gain organisational legitimacy in a host country with weak institutions and produce superior operating performance.

In addition to the firm-level predictors of M&A performance from the strategic management perspective (Buckley et al., 2014; Jory & Ngo, 2014; Sudarsanam & Mahate, 2006), another school of thought attempts to give organisational-behavioural explanations about M&A performance particularly from the perspective of an acquiring firm (Finkelstein & Halebian, 2002).

An acquiring firm's previous experience is often considered as a significant determinant of M&A success (Almor et al., 2014; Basuil & Datta, 2015; Buckley et al., 2014; Ellis et al., 2011; Markides & Ittner, 1994; Nadolska & Barkema, 2014; Vermeulen & Barkema, 2001). An acquiring firm with previous experience of international operations is likely to have managerial skills required to integrate an acquired firm (Almor et al., 2014), overcoming the 'liability of foreignness' of the host country (Kling et al., 2014). Further, previous M&A experience equips an acquiring firm with better knowledge on when and who to acquire and how to integrate an acquired firm and how to benefit from potential synergy, allowing the acquiring firm to apply what it has learned from past experience to subsequent M&As (Basuil & Datta, 2015; Buckley et al., 2014; Ellis et al., 2011). Such improved capabilities to evaluate a potential acquired firm, effectively implement post-acquisition, and deal with tension and conflicts with the acquired firm help the experienced acquiring firm to reap successful M&A outcomes (Basuil & Datta, 2015; Buckley et al., 2014; Markides & Ittner, 1994; Nadolska & Barkema, 2014; Vermeulen & Barkema, 2001). However, the transfer effects cannot be always positive but negative when previous experience limits organisational learning (Meschi & Metais, 2015) and when the lessons learned from previous experience cannot be applied to subsequent M&A events (Basuil & Datta, 2015; Ellis et al., 2011).

From the perspective of organisational learning theory, a firm improves routines and capabilities as it takes repeated actions in similar situations. The firm refines and reinforces its routines and capabilities accommodating the same patterns of strategic decisions in subsequent events (Nelson & Winter, 1982). Based on the mechanism of organisational routines, 'transfer effects', which are defined as "the influence of a prior event on the performance of a subsequent event" (Finkelstein & Halebian, 2002, p. 36), occur depending on similarity between a prior and subsequent event. That is, positive transfer occurs when a prior and subsequent event is similar, so that the application of organisational routines that

were used in the prior event to the subsequent event has positive performance effects. For example, Finkelstein and Haleblan (2002) and Basuil and Datta (2015) argue that an acquiring and acquired firm in a similar industrial environment are likely to have shared experience and similar internal structure on which their behaviour can be readily applied to the other firm. Therefore, the firms can effectively share their capabilities and collaborate with each other. Therefore, the scholars find that an acquiring and acquired firm in similar industry can improve their M&A performance. In a similar vein, Basuil and Datta (2015) find that previous M&A experience in a specific region helps an acquiring firm to identify the potential for synergy creation and exploit network-based resources in the region leading to superior M&A performance.

In contrast, negative transfer occurs when a prior and a subsequent event are dissimilar, so that the application of organisational routines that were used in the prior event to the subsequent event has negative performance effects. For example, Meschi and Metais (2015) argue that previous M&A experience that limits organisational learning weakens the realisation of potential synergy from subsequent M&A events. They find that a firm with M&A failure experience tends to replicate the same routines in a subsequent M&A event and increases the likelihood that it fails again. Further, Ellis et al. (2011) argue that previous experience of small-size M&As cannot be applied to large-size M&As since they include a more complex post-acquisition process in which a number of organisation members get involved and therefore requires more sophisticated integration commitment of an acquiring firm. Consistent with their arguments, Ellis et al. (2011) find that an acquiring firm with small-size M&A experience tends to undermine the performance of its subsequent large-size M&As.

An increasing amount of literature emphasises the planning of inter-firm collaborations of two independent firms during a pre-acquisition process (Capron et al., 2001; Larsson & Finkelstein, 1999). Therefore, the inter-firm level analysis is much discussed, taking into consideration the characteristics of both an acquiring firm and acquired firm within the efficiency perspective of M&As and a variety of theoretical lens.

Extending the logic behind related M&As, M&As of an acquiring and acquired firm with similar operations, resources, and capabilities are viewed as potential for the achievement of operational efficiency (Capron et al., 2001; Saxton & Dollinger, 2004). By transferring similar resources and capabilities to a partner firm, an acquiring and acquired firm can remove redundancy and reconfigure their business and resources, which improves operational efficiency and M&A performance (Capron, 1999; Saxton & Dollinger, 2004).

Beyond the mechanism of similarity as a source of organisational efficiency from the efficiency perspective of M&As, M&A researchers understand similarity between an acquiring and acquired firm as the source of 'organisational fit' between them (Datta, 1991). According to social-identification theory (Ashforth & Mael, 1989), people tend to find themselves and others in various social categories such as age, gender, and religion, and find those who are perceived as similar to themselves attractive. Applying the tenet of the theory into M&As, when the employees of an acquired firm find an acquiring firm similar regarding culture, process, and practice, they are willing to cooperate with the acquiring firm (Teerikangas, 2012; Very et al., 1997). Extending the principles about the social-identification literature, previous literature highlights incompatibility issues stemming from differences in culture and organisational systems between an acquiring and acquired firm (Datta, 1991; Schoenberg, 2004). Datta (1991) and Schoenberg (2004) argue that M&As where the practices and values of an acquired firm are perceived as incompatible with those of an acquiring firm result in cultural clash between acquiring and acquired firm and less commitment to their M&A. As a result, organisational incompatibility can lead to increases in high post-acquisition costs and poor M&A performance (Datta, 1991; Schoenberg, 2004). In support of their arguments, many researchers find the significant and positive effects of organisational fit on M&A performance (Ahammad et al., 2016; Bauer & Matzler, 2014; Datta, 1991; Ramaswamy, 1997; Saxton & Dollinger, 2004; Schoenberg, 2004; Stahl & Voigt, 2008).

While similarity has been viewed as the primary source of operational efficiency and organisational fit that reduces cultural clash (Stahl & Voigt, 2008), the scholars of resource-based theory argue that similarity is redundancy that reduces possibilities to transfer and share knowledge between an acquiring and acquired firm and therefore limits potential for knowledge creation, innovation, and revenue-based synergy (Bauer & Matzler, 2014; Harrison et al., 1991; Kim & Finkelstein, 2009; King et al., 2008; Larsson & Finkelstein, 1999; Sears & Hoetker, 2014). Complementarity is often understood as different yet related knowledge, resources, and/or strategies that can be combined or reconfigured to create synergy that would not exist in either firm before an M&A context (Kim & Finkelstein, 2009). The underlying logic held by the advocates of complementarity stems from differences that are mutually supportive (Bauer & Matzler, 2014). By allowing an acquiring and acquired firm to exploit the other party's expertise in complementary areas, the firms can deepen existing knowledge and develop new knowledge that either firm could not create alone (Gubbi & Elango, 2016; Harrison et al., 1991; Kim & Finkelstein, 2009). In this sense, complementarity emerges as a relatively new concept and a promising denotation in literature on M&As expanding strategic

and market complementarity (Bauer & Matzler, 2014; Kim & Finkelstein, 2009) and knowledge complementarity (Harrison et al., 1991; King et al., 2008; Larsson & Finkelstein, 1999). Complementarity is found beneficial to M&As (Bauer & Matzler, 2014; Gubbi & Elango, 2016; Harrison et al., 1991; Kim & Finkelstein, 2009; King et al., 2008; Larsson & Finkelstein, 1999; Sears & Hoetker, 2014).

In parallel with the logic behind strategic and knowledge complementarity within the resource-based theory, Rogan and Sorenson (2014) adopt a relational perspective and investigate the effects of a third-party between an acquiring firm and a potential acquired firm on M&A performance. They argue that a third-party that has a direct or indirect relationship with both an acquiring and a potential acquired firm at the same time can provide the acquiring firm with private information on the potential acquired firm's strategic and operational knowledge and resources. However, the potential acquired firm suggested by the third party seems similar to the acquiring firm because the third party is likely to be the clients, suppliers, and/or providers of both the acquiring and acquired firm. Therefore, the knowledge of the acquired firm is likely to be similar and redundant to that of the acquiring firm, which limits the potential for the re-combination of existing knowledge and innovation. Consistent with their arguments, Rogan and Sorenson (2014) observe the negative effects of the engagement of a third-party between an acquiring and acquired firm in target selection on M&A performance.

Within resource-based theory, Arvanitis and Stucki (2015) examine M&As between Small and Medium-sized Enterprises (SMEs). The scholars argue that the operational managers of SMEs are likely to be the owner or main shareholder of the firm, which may reduce the possibility for the agency problem. Moreover, M&As of small acquired firms, in which a smaller number of organisational members get involved than M&As of larger acquired firms (Ellis et al., 2011), can effectively implement restructuring and tackle coordination problems. Nevertheless, a small acquiring firm tends to have a limited ability to manage and lead an acquired firm and to understand its culture, which can impair M&A performance. In spite of the both advantages and disadvantages of M&As between SMEs, Arvanitis and Stucki (2015) find that M&As between SMEs increase an acquiring firm's productivity without further investment, showing that the positive effects of small M&As outweigh their negative effects.

While discussion on M&As has been well-developed across various analysis levels, M&As have been relatively little discussed at the industry-level, except for Finkelstein and Halebian (2002) and Carow et al. (2004). As stated before, Finkelstein and Halebian (2002) introduce

the concept of transfer effect and argue that an acquiring firm and acquired firm in the same industry are likely to have similar experience and develop similar organisational practices attuned to the industry. In such M&As, the acquiring firm can effectively transfer its routines and capabilities embedded in the industry to the acquired firm and the firms can leverage the industry-specific practices.

While Finkelstein and Halebian (2002) discuss industry similarity between an acquiring and an acquired firm as an institution in which they learn and behave and develop organisational capabilities legitimised in that industry, Carow et al. (2004) discuss first-mover advantages in an industry M&A wave. Taking into account the presence of entry order effects in industry, Carow et al. (2004) argue that first-mover advantages such as the selection of the best target with desirable assets among a wide range of choices are available for early entrants. In technology-based M&As where an acquiring firm purchases a target firm with advanced technological capabilities, an acquiring firm tends heavily invest in an acquired firm's R&D activities to support its innovation. As technology-based M&As become popular, a promising target firm with desired assets becomes rare and its prices goes up. In this regard, early entrants in an industry M&A wave have great potential to realise superior M&A performance.

Along with a growing tendency to inter-firm collaboration across borders, M&A researchers acknowledge an institutional environment as a significant consideration of international business and move to examine institutional differences between home and host countries (Chatterjee et al., 1992; Du & Boateng, 2015; Morosini et al., 1998). Building from institution-based theory, it is argued that achieving organisational legitimacy of external stakeholders such as local government and customers is a primary task for a firm to survive in a country (Hannan & Freeman, 1984). In order to gain the acceptance of a firm by its environment, the firm should adapt its strategies to the institutions of a country and conform to other organisations and local institutional requirements in the country (DiMaggio & Powell, 1991). As a result, a firm's structure, practices, and processes are deeply embedded in its country and aligned with those of competitors in the country. When a firm whose operations are particularly bounded by the institutions of its home country expands its business into a host country, the firm often faces the conflicting demands of local legitimacy such as the ways of executing tasks, solving problems, and communicating, which directly or indirectly affect firm performance. Therefore, the scholars of institution-based theory argue that institutional differences between a home country and a host country indicate the extent to which an acquiring firm finds it difficult to operate its business in the host country and integrate acquired employees (Lee et al., 2015). Building from the logic behind the institution-based

theory, existing literature on cross-border M&As finds that institutional differences between an acquiring and acquired firm limits knowledge sharing (Brock, 2005), cause cultural clash (Lee et al., 2015) and integration problems (Brock, 2005; Hajro, 2015) and therefore impair employee productivity (Ataullah et al., 2014) and M&A performance (Brock, 2005; Chatterjee et al., 1992).

In spite of the traditional institution-based perspective on institutional differences as a barrier to post-acquisition (Brock, 2005; Hajro, 2015) and M&A performance (Brock, 2005; Chatterjee et al., 1992), the scholars of strategic management view institutional differences as the source of a firm's competitive advantage (Morosini et al., 1998). Morosini et al. (1998) argue that a firm has valuable and unique organisational knowledge and capabilities embedded in its institutional and cultural environment. Cross-border M&As of an acquiring and acquired firm represent the potential for a diverse set of organisational knowledge and capabilities, which cannot be easily imitated but be the source of innovation and a firm's sustainable competitive advantage. Accordingly, Morosini et al. (1998) find that the larger cultural differences between an acquiring firm's home country and an acquired firm's host country, the greater their M&A performance is. Supporting their arguments, Stahl and Voigt (2008) find that cultural differences between an acquiring and acquired firm reap great profits when they have low or moderate levels of similar knowledge.

Incorporating both negative and positive aspects of institutional differences, a group of researchers acknowledge the conflicting roles of institutional differences between an acquiring and acquired firm (Dikova & Sahib, 2013; Slangen, 2006), which are termed 'a double-edged sword' (Reus & Lamont, 2009). In line with the traditional institution-based perspective (Brock, 2005; Chatterjee et al., 1992), Slangen (2006) and Dikova and Sahib (2013) view cultural differences between an acquiring and acquired firm as the source of cultural clash and 'acculturative stress' (Very et al., 1996), which is "the disruption tension that is felt by the members of a culture when they are required to interact with a second culture and to adopt its ways" (Very et al., 1996, p.59). Cultural clash becomes greater in accordance with greater cultural differences (Hajro, 2015; Lee et al., 2015). Acculturative stress increases when an acquired firm does not find the culture of an acquiring firm attractive and is not willing to adopt the way it has operated (Very et al., 1996, Very et al., 1997). However, Slangen (2006) argues that an acquiring firm can avoid cultural clash by granting autonomy to an acquired firm and allowing it to maintain its cultural-specific practices. Moreover, Dikova and Sahib (2013) argue that an experienced acquiring firm has a better ability to deal with post-acquisition challenges coming from acculturative stress and to implement post-acquisition. Accordingly,

Slangen (2006) and Dikova and Sahib (2013) provide evidence that cross-border M&As adopting autonomy and by an acquiring firm with previous experience can reduce the negative effects of cultural differences and amplify their positive effects on M&A performance.

M&A success is predicted under the following pre-acquisition conditions. First, if an acquiring firm finances an M&A with cash, the M&A completion signals the possession of the acquiring firm's informational advantage, which increases synergy creation. Second, a hostile acquiring firm can achieve M&A success by purchasing an underperforming acquired firm and replacing its inefficient top management team. Moreover, an acquiring firm with abundant capital can achieve operational efficiency by providing its abundant capital with an acquired firm and learn new capabilities by exploiting the acquired firm's competitive advantage. An acquiring firm purchasing a state-owned acquired firm can benefit from local resources offered by the state-owned institutions in the acquired firm's host country. Third, the earlier an acquiring firm participates in an industry acquisition wave, the more likely it is to find an acquired firm with desirable knowledge and resources. Fourth, from the perspective of efficiency, M&As of an acquiring firm similar to an acquired firm in terms of industry, organisational systems, and resources have great potential for increases in operational efficiency. Fifth, drawing from organisational learning theory, previous experience enables a firm to have a better ability to select a right acquired firm and to tackle issues taking place during the collaboration with the acquired firm, which facilitates smooth post-acquisition and therefore M&A success. Sixth, those acquiring and acquired firm who have similar organisational and national culture can reduce cultural clash and tension between them and effectively implement post-acquisition. Beyond the organisational behavioural perspectives on cultural differences, the strategic management school finds that cross-border M&As exhibiting greater cultural differences between an acquiring and acquired firm become successful because the firms develop unique knowledge and resources and offer each other new knowledge and insights that can be the source of internal development of innovation. Moreover, cultural differences can be overcome when an acquiring firm gives autonomy to an acquired firm and has previous M&A experience. Finally, the scholars of resource-based theory find that M&As that enables an acquiring and acquired firm to complement their existing knowledge and strategy can produce successful outcomes.

2.1.1.2. Post-Acquisition

Following the completion of an M&A deal, an acquiring and acquired firm step into a post-acquisition process in which an acquiring firm employs post-acquisition structure, engages in post-acquisition conduct in collaboration with an acquired firm, and reap post-

acquisition performance (Birkinshaw et al., 2000; Capron, 1999; Cording et al., 2008). Accordingly, an increasing number of M&A studies are focused on post-acquisition issues and attempt to discover post-acquisition conditions for effective post-acquisition implementation and M&A success (Cording et al., 2008).

There has been nearly absent discussion made on the post-acquisition determinants at the transaction-level and at the country-level. It may be obvious that the transaction and country analysis levels only deal with the pre-acquisition conditions. This is because M&As themselves are planned strategy. Moreover, M&A entry can be decided and M&A performance can be predicted based on the analysis on a host country's institutions before M&A completion (Brouthers & Brouthers, 2000). That is, transaction-based and country-based determinants and post-acquisition determinants cannot go together. Directly moving to a firm-level analysis, I review previous literature on the effects of an acquired firm's top management turnover on M&A performance (Cannella & Hambrick, 1993; Kiessling et al., 2012; Krishnan et al., 1997; Saxton & Dollinger, 2004; Zollo & Singh, 2004) and the effect of acquired employees' reaction towards M&A events on M&A performance (Larsson & Finkelstein, 1999).

There has been a general agreement that the replacement of an acquired firm's top management disrupts M&A performance (Cannella & Hambrick, 1993; Kiessling et al., 2012; Krishnan et al., 1997; Saxton & Dollinger, 2004; Zollo & Singh, 2004). This is because the replacement of an acquired firm's top management involves a loss of human and social capital (Kiessling et al., 2012; Zollo & Singh, 2004) and causes an acquiring firm to encounter hostile atmosphere among the rest of the acquired firm (Cannella & Hambrick, 1993; Krishnan et al., 1997). Moreover, the disruptive effect of the replacement of an acquired firm's top management becomes more distinguishable when the acquired firm holds high quality resources (Zollo & Singh, 2004).

M&A performance can be impeded by a lack of support from an acquired firm (Larsson & Finkelstein, 1999). Organisational misfit, which is differences in organisational systems, practices, and management styles (Datta, 1991), can be an obstacle to post-acquisition (Larsson & Finkelstein, 1999). When an acquiring and acquired firm perceive the culture, practices, and systems of the other firm as different from each other, the acquiring firm would experience significant conflicts and generate tension between acquiring and acquired employees. Employee resistance from acquired employees can be a significant cause for M&A failure in the end (Larsson & Finkelstein, 1999). In M&As where an acquiring and acquired firm have similar governance structure, similar firm size, and have previous partnership experience,

the acquired employees can find the acquiring firm as attractive and compatible with their previous culture and systems (Teerikangas, 2012). In contrast, in M&As where acquired employees perceive practices and value of an acquiring firm as incompatible with those of theirs, this incompatibility can result in cultural clash and less commitment from the acquired employees to the M&A events (Very et al., 1996) and hurt M&A performance (Larsson & Finkelstein, 1999; Schoenberg, 2004).

It may be obvious that existing literature analyses the post-acquisition determinants of M&A performance most at the inter-firm level because two previously separate firms get involved in M&As, and M&A performance is dependent on their interaction and coordination. Alongside increasing scholastic attention paid to addressing the post-acquisition determinants of M&A performance that incorporate the perspectives of both an acquiring firm and an acquired firm, previous literature explains the M&A phenomenon regarding: (1) post-acquisition structure (e.g., Datta & Grant, 1990); (2) the transfer of knowledge resources from/to acquiring to/from an acquired firm (Capron, 1999); and (3) the knowledge-sharing capabilities of an acquiring and acquired firm (Brock, 2005).

At the heart of the post-acquisition process in which an acquiring and acquired firm engage in post-acquisition conduct lies post-acquisition structure (Cording et al., 2008). A group of scholars argue that structural integration leads to better M&A performance based on the efficiency perspectives of M&As (Datta, 1991; Homburg & Bucerius, 2005; Sinkovics et al., 2015). In M&As where an acquiring and acquired firm have much in common regarding products, markets, and resources, the firms are likely to have redundant and similar knowledge and resources at the same time, the former of which causes inefficiency in organisational processes and incurs high operational costs while the latter of which is the source of competitive advantage (Capron, 1999; Capron et al., 2001). Therefore, an acquiring and acquired firm integrate their functional operations to remove redundancy and to improve the productivity of existing resources (Datta, 1991; Cording et al., 2008). Therefore, structural integration can improve operational efficiency, bringing about improved economic and financial benefits (Cording et al., 2008; Homburg & Bucerius, 2005; Saxton & Dollinger, 2004; Sinkovics et al., 2015; Zollo & Singh, 2004).

In contrast, M&As in which an acquiring and acquired firm have not much in common often do not intend to align their operations each other but keep them independent of the other firm (i.e., autonomy) (Lin, 2014). This is because M&As of an acquiring and acquired firm with little similar knowledge and resources each other limit the transfer and combination of

their knowledge and resources and thereby limit the potential for synergy creation (Seth, 1990). Moreover, in the case of structural integration, an acquiring firm can diminish an acquired firm's relative standing and causes the acquired executives to leave the firm (Hambrick & Cannella, 1993; Lubatkin et al., 1999). By granting autonomy to an acquired firm, an acquiring firm can improve the acquired firm's relative standing and prevent a loss of knowledge, which in turn positively affects M&A performance (Datta & Grant, 1990; Very et al., 1997).

Integration speed remained relatively unexplored till Homburg and Bucerius (2005) discuss the question of how the speed of structural integration affects the market dimensions of M&A performance. Homburg and Bucerius (2005) argue that speedy structural integration reduces customer uncertainty, reducing rumour spreading and customer switching towards competitors in the case of a long-term restructuring process. Consistent with their arguments, speedy structural integration is found to be beneficial to M&A performance (Homburg & Bucerius, 2005; Sinkovics et al., 2015). In Homburg and Bucerius's (2005) subsequent literature, the speed of integration is further developed in regard to the speed at which structural integration should take place and under what circumstances a quick implementation of structural integration may be beneficial or detrimental to M&A success (Homburg & Bucerius, 2006). Extending the rationale of strategic similarity and organisational compatibilities between firms into the speed of structural integration, Homburg and Bucerius (2006) find that the effect of structural-integration speed on M&A performance is dependent on organisational compatibility in marketing strategy, organisational culture, and performance. Speedy structural integration in M&As where an acquiring and acquired firm have similar market coverage and market positioning impairs M&A performance. In contrast, speedy structural integration in M&As where an acquiring and acquired firm have similar organisational culture and performance improves M&A performance.

One noticeable characteristic identified in existing literature on M&As is the development of a process perspective as a distinct stream of literature (Jemison & Sitkin, 1986). The process perspective specifically provides explanations about a post-acquisition process in which an acquiring and acquired firm integrate and reconfigure their operational processes, procedures, and systems and establish a psychological relationship between the acquiring and acquired firm at the same time (Birkinshaw et al., 2000). Due to the multifaceted nature of post-acquisition, the process perspective emerges to clarify post-acquisition and account for how post-acquisition affects M&A performance, drawing on the multiple perspectives of HRM, organisational behaviour, economic, financial, strategic management fields (Haspeslagh &

Jemison, 1991; Jemison & Sitkin, 1986). The school of the process perspective examines M&A performance, incorporating a variety of post-acquisition factors: structural integration (Birkinshaw et al., 2000; Larsson & Finkelstein, 1999), autonomy (Ellis et al., 2009), communication levels (Birkinshaw et al., 2000; Ellis et al., 2009), voluntary personnel loss (Birkinshaw et al., 2000; Larsson & Finkelstein, 1999), and cultural fit (Birkinshaw et al., 2000). The findings of these studies imply that M&A performance hinges on effective post-acquisition implementation managed in a way that fosters collaboration between an acquiring and acquired firm. Therefore, the process perspective provides an integrated perspective of multiple theoretical aspects on post-acquisition and M&A performance.

Perceiving M&As embedded in a knowledge-based process in which an acquiring and acquired firm transfer and share their existing knowledge and resources, Brock (2005), Capron (1999), and Capron and Pistre (2002) understand effective post-acquisition implementation from resource-based theory and institution-based theory. Drawing from the resource-based theory, an acquiring and acquired firm have access to the complementary knowledge resources of the other firm, which contributes to the recipient's weaknesses in existing resources and capabilities. The flow of knowledge transfer from/to an acquiring firm to/from an acquired firm indicates the leveraging and combination of the complementary knowledge resources of the recipient firm, improving revenue-enhancing capabilities (Capron, 1999) and capturing synergistic benefits (Capron & Pistre, 2002).

Capron and Pistre (2002) find that knowledge transfer from an acquired firm to an acquiring firm alone little contributes to M&A performance. However, M&As become successful when an acquiring firm transfers its innovation and managerial knowledge resources to the acquired firm. Moreover, when an acquiring firm transfers its innovation and managerial knowledge resources to the acquired firm and the acquired firm transfers its marketing knowledge resources to the acquiring firm at the same time, M&As produce superior performance. The results of insignificant knowledge transfer from an acquired firm to an acquiring firm but significant knowledge transfer from the acquiring firm to the acquired firm may be understood in a way that knowledge transfer functions as a post-acquisition mechanism in which an acquiring firm imposes its operating procedures, routines, and practices on an acquired firm and control it (Child et al., 1999; Lubatkin et al., 1998).

Although Capron and Pistre (2002) find that knowledge transfer from an acquired firm to an acquiring firm does not contribute to M&A performance, Capron (1999) finds that both directions of knowledge transfer from/to an acquiring firm to/from an acquired firm improve

innovation capabilities and market coverage and therefore realise M&A success (Capron, 1999), That is, knowledge transfer affects M&A performance through capability enhancement. Post-acquisition innovation can act as a mediatory cause of M&A performance.

Although transfer activities are viewed as the source of capability enhancement (Capron, 1999) and the determinants of M&A performance (Capron & Pistre, 2002) from the perspective of strategic management, Reus et al. (2016) find that knowledge transfer particularly from an acquiring firm to an acquired firm is an impediment to stability in the acquired firm from the perspective of organisational behaviour. Reus et al. (2016) argue that knowledge transfer from an acquiring firm to an acquired firm is a function of imposing the way in which an acquiring firm has operated on an acquired firm. While there is absent transfer of knowledge from an acquiring firm to an acquired firm, the acquired firm can preserve its routines and capabilities and its executives can maintain their power, which enables the acquired firm to keep stable. However, when an acquiring firm starts to transfer its knowledge to an acquired firm, the acquiring firm's knowledge, which tends to be embedded in its routines, can impair the acquired firm's existing knowledge, capabilities, and stability and therefore harm M&A performance. However, when an acquiring firm transfers a high volume of its knowledge to an acquired firm and stabilises the process of transferring knowledge to the acquiring firm, a mechanism in which knowledge is commercially exploited and applied in the acquired firm is standardised. The acquiring firm can achieve dominant power structure and establish an organisational climate of cooperation from the acquired firm. Accordingly, Reus et al. (2016) show that the increasing transfer of an acquiring firm's knowledge undermines an acquired firm's performance, while the high transfer of the acquiring firm's knowledge improves the acquired firm's performance.

Although synergistic benefits are derived from transfer activities between an acquiring and an acquired firm (Capron, 1999; Capron & Pistre, 2002; Reus et al., 2016), previous literature argues that without direct evidence of knowledge sharing, it is difficult to claim that knowledge has been actually transferred and used (Darr & Kurtzberg, 2000). In line with this previous argument, Brock (2005) discusses an acquiring and acquired firm's capability to share knowledge between them. Applying institution-based theory to an M&A context, Brock (2005) argue that cultural differences between an acquiring and an acquired firm are the source of cultural clash and conflicts between them, incurring high costs associated with knowledge sharing. Knowledge sharing is less likely to occur between an acquiring and an acquired firm from culturally dissimilar countries than from culturally similar countries.

In summary, an increasing amount of existing literature turns its attention to post-acquisition conditions for M&A success majorly at the firm level (Cannella & Hambrick, 1993; Larsson & Finkelstein, 1999) and at the inter-firm level (Brock, 2005; Capron, 1999). The existing literature at the firm level takes consideration of the post-acquisition of an acquired firm in terms of the replacement of an acquired firm's executives (Cannella & Hambrick, 1993; Kiessling et al., 2012) and acquired employees' reactions towards M&As (Larsson & Finkelstein, 1999). The turnover of an acquired firm's executives undermines M&A performance due to a loss of human capital and the creation of hostility towards an acquiring firm. In a similar vein, a lack of support from acquired employees towards M&As is harmful to M&A performance.

While the firm-level analysis is significantly focused on the post-acquisition conditions of an acquired firm, the literature at the inter-firm level addresses post-acquisition issues, taking into consideration both an acquiring and an acquired firm (Capron, 1999). Structural integration and autonomy are predominantly discussed as a predictor of M&A success and found to positively affect M&A performance (Cording et al., 2008; Datta & Grant, 1990; Saxton & Dollinger, 2004; Very et al., 1997). Interestingly, recent years have witnessed the discussion made on how the speed of structural integration affects M&A performance (Bauer & Matzler, 2014; Cording et al., 2008; Homburg & Bucerius, 2005, 2006; Sinkovics et al., 2015). Viewing post-acquisition as the integration of task dimensions as well as human dimensions from multiple theoretical foundations, a process perspective is created as an independent theoretical branch in existing literature on M&As (Birkinshaw et al., 2000; Ellis et al., 2009; Larsson & Finkelstein, 1999). The scholars of the process perspective observe that M&A success is driven when the operational functions and employees of an acquired firm are integrated into an acquiring firm (Birkinshaw et al., 2000; Ellis et al., 2009; Larsson & Finkelstein, 1999).

While previous literature constructs a post-acquisition mechanism in which post-acquisition structure determines M&A performance within few theoretical foundations (Grimpe, 2007; Homburg & Bucerius, 2005; Larsson & Finkelstein, 1999; Lin, 2014; Saxton & Dollinger, 2004; Weber, 1996; Zollo & Singh, 2004), some studies attempt to understand post-acquisition from resource-based theory (Capron, 1999; Capron & Pistre, 2002), organisational learning theory (Reus et al., 2016), and institution-based theory (Brock, 2005). Capron (1999) and Capron and Pistre (2002) examine how knowledge transfer from an acquiring firm to an acquired firm and vice versa contributes to M&A performance. Capron (1999) finds that both directions of knowledge transfer from/to an acquiring firm to/from an acquired firm lead to M&A success through the advancement of marketing and innovation capabilities. Capron and

Pistre (2002) observe that superior M&A performance is produced not only when an acquired firm alone transfers its knowledge resources to an acquiring firm but also when the acquiring firm also transfers its knowledge resources to the acquired firm. In contrast to the resource-based explanations about the roles of knowledge transfer, Reus et al. (2016) give behaviour-based explanations and find that knowledge transfer from an acquiring firm to an acquired firm disturbs the acquired firm's routines and therefore hampers its M&A performance. Acknowledging an acquiring and acquired firm's capability to share knowledge as a prerequisite for M&A success, Brock (2005) gives institution-based explanations about knowledge sharing and discovers that the greater institutional differences between an acquiring and acquired firm, the smaller knowledge sharing, the less likely it is to produce superior M&A performance.

2.1.1.3. Contribution and Limitations of Existing Studies

There has been in-depth discussion on M&As established across pre-acquisition and post-acquisition. M&As, which require high resource commitment yet involve high uncertainty about a firm's future performance, are perceived as risky long-term investments. In order for an acquiring firm to reduce the danger of M&A failure, it needs intense planning before M&A completion. Accordingly, much existing literature is focused on giving pre-acquisition explanations about M&A performance (Carow et al., 2004; Datta et al., 1992). In spite of extensive academic contribution to existing knowledge on pre-acquisition, there has been little improvement in M&A failure rates (Cartwright & Schoenberg, 2006). Moreover, post-acquisition is the stage in which synergistic potential is actually realised and M&A performance is determined. This may be the cause of a shift from scholastic attention from pre-acquisition issues to post-acquisition issues. Identifying a need to make in-depth discussion on post-acquisition issues, an increasing number of previous studies investigate various dimensions of post-acquisition such as structural integration and autonomy, knowledge transfer and knowledge sharing, and their effects on M&A performance (Brock, 2005; Capron, 1999; Cording et al., 2008; Datta & Grant, 1990). In line with recent attention paid to post-acquisition and consistent demands for future research amplifying collaboration between an acquiring and acquired firm, this study contributes to existing knowledge on post-acquisition.

Cross-border M&A performance, which reflects the combined performance of two merging firms across borders, can be predicted by the characteristics of that M&A event, an acquiring firm and/or an acquired firm, and their industry and institutional environments. Among this wide range of the predictors of M&A performance, those predictors that take into consideration the involvement of both an acquiring and acquired firm in the post-acquisition

process receive great attention. This is because M&A performance is determined by an acquiring firm's and an acquired firm's mutual efforts to collaborate with each other. Accordingly, the inter-firm level emerges as a dominant analysis level developing understanding of post-acquisition and M&A success.

Among a wide range of the post-acquisition determinants at the inter-firm level, structural integration and autonomy serve as a means of guiding post-acquisition conduct and unlocking M&A performance (Cording et al., 2008). Following the completion of an M&A deal, an acquiring firm makes a choice between structural integration and autonomy. Integrating an acquired firm into an acquiring firm, they can achieve operational efficiency in fulfilling tasks, solving problems, and communicating (Datta, 1991). Alternatively, granting autonomy to an acquired firm, an acquiring firm can reduce the acquired firm's negative reaction to an M&A and motivate acquired employees to collaborate with the acquiring firm (Hambrick & Cannella, 1993). As the decision to integrate an acquired firm or grant autonomy to the acquired firm affects post-acquisition conduct and then M&A performance (Cording et al., 2008), structural integration and autonomy have emerged as decisive predictors of M&A success (Saxton & Dollinger, 2004; Very et al., 1997). Acknowledging structural integration and autonomy as a proxy for effective post-acquisition implementation, this study is built on the mechanisms of post-acquisition structures of structural integration and autonomy and focused on addressing the question of how the choice between structural integration and autonomy affects M&A outcomes.

Despite a great deal of discussion at the inter-firm level, previous literature on M&As offers insufficient knowledge-based insights into post-acquisition conduct (Brock, 2005; Capron, 1999; Reus et al., 2016). For example, identifying knowledge acquisition and combination as the driver of synergy creation and superior M&A performance, Brock (2005) provides institution-based explanation about an acquiring and acquired firm's capability to share knowledge with each other and examines how cultural differences between an acquiring and acquired firm affect synergy creation through knowledge sharing. Moreover, Capron (1999) provides resource-based explanations about transfer activities between an acquiring and acquired firm and untangle how the flows of transfer activities from an acquiring firm or an acquired firm to the other firm contribute to M&A performance. Inspired by the literature by Capron (1999), Reus et al. (2016) investigate how knowledge transfer from an acquiring firm to an acquired firm affects M&A performance within the perspective of organisational learning theory. Though these studies imply that knowledge-transfer activities and knowledge-sharing capabilities are essential for post-acquisition success, it is limited to M&A performance from

the perspectives of institution-based theory (Brock, 2005), resource-based theory (Capron, 1999), and organisational learning theory (Reus et al., 2016). Acknowledging a need to develop knowledge-based understanding of post-acquisition, this study expands cross-border M&As along knowledge-based theory.

Post-acquisition innovation has been viewed as a powerful motive for M&A participation (Grimpe, 2007). Accordingly, previous literature attempts to advance understanding of post-acquisition innovation, in terms of what determines an acquiring and acquired firm's innovation capabilities (Colombo & Rabbiosi, 2014) and how an acquiring and acquired firm achieve post-acquisition innovation (Grimpe, 2007; Kapoor & Lim, 2007). This is discussed in detail in Section 2.1.2.3. Nevertheless, little literature gives evidence about the performance effect of post-acquisition innovation (c.f., Chen et al., 2010; Colombo & Rabbiosi, 2014). In this sense, this study identifies a need to discuss post-acquisition innovation and incorporates it into a conceptual framework of post-acquisition.

To sum up, this study has recognised a need to develop existing knowledge on a post-acquisition mechanism in which an acquiring and acquired firm get involved in post-acquisition conduct and then produce performance outcomes within knowledge-based theory. Specifically, how post-acquisition structures (i.e., structural integration and autonomy) affect M&A outcomes, how post-acquisition innovation affects M&A outcomes, and how knowledge-based theory advances understanding of post-acquisition and cross-border M&As are little discussed. Seeking the in-depth review of existing studies on structural integration and autonomy, knowledge transfer and knowledge sharing, and post-acquisition innovation, this study identifies research gaps (Section 2.1.3) and builds research aim and objectives.

2.1.2. Post-Acquisition

Post-acquisition is the whole process in which an acquiring and acquired firm interact and collaborate after their M&A completion. At the heart of post-acquisition lies post-acquisition structure for M&A success. In M&As where the functional operations of an acquired firm are integrated into those of an acquiring firm, the integrated acquiring and acquired firm seek increases in task interdependence and operational efficiency. In M&As where an acquiring firm grants autonomy to an acquired firm, the acquiring firm increase the acquired firm's relative standing (Hambrick & Cannella, 1993), reduces the high turnover of acquired executives (Hambrick & Cannella, 1993; Lubatkin et al., 1999), and preserves the acquired firm's innovation capabilities (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). That is, the post-acquisition structures of structural integration and autonomy guide

post-acquisition conduct such as knowledge transfer, knowledge sharing, and post-acquisition innovation and determine M&A performance. Depending on the choice between structural integration and autonomy, the way in which an acquiring and acquired firm shape post-acquisition conduct may differ. The way in which M&A performance is driven may differ. In this sense, this section focuses on the review of previous literature on structural integration and autonomy, knowledge transfer and knowledge sharing, and post-acquisition innovation.

2.1.2.1. Post-Acquisition Structure

Tracing back to a traditional study on post-acquisition, Haspeslagh and Jemison (1991) introduce three primary post-acquisition approaches – Preservation, Absorption, and Symbiotic – depending on the extent to which an acquiring firm pursues task interdependence with an acquired firm and/or grants autonomy to it. Briefly speaking, the preservation approach is used in M&As seeking low interdependence and high autonomy. The absorption approach is used in M&A seeking high interdependence and low autonomy. The symbiotic approach is used in M&As seeking high interdependence as well as high autonomy. Based on their suggestion of the post-acquisition approaches, existing studies conceptualise post-acquisition structure based on the need for interdependence and autonomy (Puranam et al., 2006) and investigates post-acquisition conduct depending on the choice between structural integration or autonomy (Paruchuri et al., 2006; Puranam et al., 2006). Accordingly, this study constructs post-acquisition structure as structural integration and autonomy and reviews previous literature discussing the effects of structural integration and autonomy on M&A performance.

2.1.2.1.1. Structural Integration

An appropriate exercise of structural integration is a pre-requisite for the efficient operation of an acquiring and acquired firm. Acknowledging structural integration, much previous literature on M&As discusses the conditions in which an acquiring firm decides to integrate an acquired firm and the situations in which structural integration can produce superior M&A performance (Cording et al., 2008; Puranam & Srikanth, 2007).

The conceptualisation of structural integration needs to be understood with respect to the types of M&As in which an acquiring and acquired firm get involved (Datta & Grant, 1990). Related M&As, where an acquiring and acquired firm have high levels of similarity in products, markets, and technologies and presumably are in the same industry, have great potential for operational efficiency by removing redundancy and learning new knowledge and skills in areas with which an acquiring and acquired firm are familiar (Anand & Singh, 1997; Seth, 1990). In

contrast, within unrelated M&As, which are the combination of two firms that are essentially in dissimilar industry, they neither have much in common regarding products, markets, and technologies nor expect to take advantages of the outcomes that related M&As can bring about. Rather, the acquiring firm expect risk spreading effects from unrelated M&As (Seth, 1990). A firm that concentrates its businesses either on a single nation's markets or on a single industry tends to expose to risk such as changes in monetary and fiscal policies, the cost of energy, tax laws, and the demographics of the marketplace (Hisey & Caves, 1985). Therefore, unrelated M&As are believed to reduce market fluctuations by putting "all of one's eggs in different baskets" (Chatterjee & Lubatkin, 1990, p. 258) and often chosen as risk-reduction strategy spreading the risk of a firm's investment portfolio (Hisey & Caves, 1985; Seth, 1990). These advantages of related and unrelated M&As serve as a strong cause of the choice between structural integration and autonomy and determine M&A performance (Datta & Grant, 1990; Lin, 2014).

As related and unrelated M&As require different levels of task interdependence, the extent to which structural integration is implemented over an acquired firm is dependent on M&A types (Lin, 2014). Within related M&As where an acquiring firm take advantages of synergistic benefits generated from the similar knowledge of an acquired firm, structural integration of functional operations is indeed needed (Lin, 2014). By integrating the functional operations of an acquired firm into those of an acquiring firm, they can remove redundancy and expand their production on an efficiency scale, which generates cost-saving effects (Datta, 1991; Zollo & Singh, 2004). Moreover, combining the capabilities and resources of an acquiring and acquired firm, structural integration enables the firms to complement their existing knowledge and capabilities, which is linked with profit growth in the end (Larsson & Finkelstein, 1999). As expected, most of the relevant literature finds that M&As adopting structural integration become successful (Grimpe, 2007; Homburg & Bucorius, 2005; Larsson & Finkelstein, 1999; Lin, 2014; Saxton & Dollinger, 2004; Weber, 1996; Zollo & Singh, 2004).

By contrast, within unrelated M&As where an acquiring firm is unfamiliar with the knowledge and resources of an acquired firm and there is little potential for the benefits that structural integration can bring about, the acquiring firm does not intend to integrate an acquired firm but grant autonomy to it (Datta & Grant, 1991; Lin, 2014). In spite of the efficiency-based arguments against autonomy (Galbraith & Stiles, 1984; Seth, 1990), interestingly, autonomy is found rather beneficial to M&A performance (Datta & Grant, 1990; Lin, 2014), increasing an acquired firm's relative standing (Hambrick & Cannella, 1993; Lubatkin et al., 1999) and preserving the acquired firm's capabilities embedded in its social

context and routines (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). How autonomy contributes to M&A performance is reviewed in the next section.

2.1.2.1.2. Autonomy

Beyond the efficiency-based perspective on autonomy as an impediment to creating synergy and synergy-poor strategy, autonomy has been often discussed as a way of increasing an acquired firm's relative standing, reducing the turnover of acquired executives (Hambrick & Cannella, 1993; Lubatkin et al., 1999), and preserving an acquired firm's social context and innovation capabilities (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006).

A firm has central, distinctive, and enduring organisational culture, which articulates how a firm defines itself and affects all aspects of the way that its people behave and interact with each other. As organisational culture is deeply embedded in the firm in the form of routines, norms, and identity, the disruption of such organisational culture diminishes an acquired firm's relative standing (Hambrick & Cannella, 1993; Lubatkin et al., 1999), which is referred to the extent to which an acquiring firm behaves in a dominant manner towards its acquired firm (Frank, 1985). Such diminished relative standing, in many cases, causes acquired executives to leave their firm following M&A completion (leading to a loss of knowledge, for example) and impedes their efforts to collaborate with an acquiring firm (Lubatkin et al., 1999). It is observed that the high turnover of an acquired firm's executives impairs M&A performance (Cannella & Hambrick, 1993; Kiesling et al., 2012; Krishnan et al., 1997). In contrast, in M&A events where an acquiring firm reduces its intervention in an acquired firm's decision-making process and allows the acquired firm to maintain its value in culture, routines, and norms (Datta & Grant, 1990; Lin, 2014; Very et al., 1997), the acquired firm's relative standing increases (Hambrick & Cannella, 1993). Hence, the acquired executives and employees are typically more willing to stay in the firm and collaborate with an acquiring firm (Lubatkin et al., 1999).

Finally, by granting autonomy to an acquired firm, an acquiring firm can avoid disrupting the acquired firm's social contexts in which knowledge is transferred, shared, and combined across individuals and organisational boundaries (Puranam et al., 2006). Knowledge itself has a social component (Kogut & Zander, 1992) and so the extent to which autonomy sustains the social context of the firm is likely important to M&A success (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). For example, as successful M&As are determined by the development and exploitation of capabilities and innovation outcomes of a partner firm, an acquiring firm allows an acquired firm to preserve its organisational culture and capabilities

and minimises its intervention in the acquired firm's social contexts of knowledge creation and transfer to this end. Accordingly, autonomy is perceived as an important element in determining an acquired firm's capability to innovate.

During a post-acquisition process, an acquiring and acquired firm seek to align their operations with each other for the achievement of operational efficiency or keep their operations independent of each other (i.e., autonomy) for decreases in the acquiring firm's disruption of the acquired firm's organisational value, routines, and capabilities. While the effects of structural integration and autonomy have been widely discussed, the key issue underlying the development of post-acquisition structure for future research is how structural integration and autonomy affect M&A outcomes. This research gap lays the foundation for this study incorporating an innovation-based perspective. This will be further discussed in the section of research gap later (Section 2.1.3).

2.1.2.2. Knowledge Transfer and Knowledge Sharing between Acquiring Firms and Acquired Firms

M&As are used to create and develop new knowledge by having access to the knowledge of a partner firm and combining it into the existing knowledge bases of an acquiring and acquired firm (Makri et al., 2010). Because knowledge is a firm's competitive advantage, M&A success is driven when the acquiring and acquiring firm achieve knowledge-based advantages. In order for an acquiring and acquired firm to succeed in their cross-border M&A, knowledge transfer and knowledge sharing are vital as means of the renewal and transformation of their existing knowledge. Adapting the conceptualisation of resource transfer from Capron et al. (1998), knowledge transfer is referred to as the redeployment of knowledge resources from/to an acquiring firm to/from an acquired firm. Borrowing from Collins and Smith (2006), knowledge sharing is defined as the collective ability of an acquiring and acquired firms' employees to share and combine knowledge with each other. That is, knowledge transfer is focused on knowledge-transfer activities from/to an acquiring to/from an acquired firm. Knowledge sharing is focused on an acquiring and acquired firm's ability to share and combine knowledge.

When it comes to knowledge transfer, the process of knowledge resources being transferred from/to an acquiring to/from an acquired firm is a main function of post-acquisition conduct. Previous literature grasps a picture of transfer activities (Capron, 1999; Capron et al., 1998; Capron et al., 2001; Capron & Mitchell, 1998) in accordance with the stages of a post-acquisition process (Bresman et al., 2010). Among a large body of previous

literature on M&As, Capron and Mitchell (1998), Capron et al. (1998), Capron (1999), and Capron et al. (2001) provide richer insights into knowledge transfer from/to an acquiring to/from an acquired firm, inspiring subsequent literature on knowledge transfer within M&As (Junni et al., 2015; Reus et al., 2016). One view of knowledge transfer from/to an acquiring to/from an acquired firm is a means of increasing operational efficiency through the reconfiguration of existing resources and capabilities (Capron et al., 1998). When the knowledge, resources, and capabilities transferred from/to an acquiring to/from an acquired firm are already present in the recipient firm, it divests redundancy and generates cost-saving effects (Capron, 1999; Capron et al., 2001). Another view of knowledge transfer is to complement a recipient firm's weaknesses such as technical and commercial resources with a sender firm's relatively strong knowledge and resources (Capron et al., 1998; Capon & Mitchell, 1998), which improves the acquiring and acquired firm's market coverage and innovation capabilities (Capron, 1999). It is often observed that both directions of knowledge transfer from/to an acquiring firm to/from an acquired firm improve revenue-based capabilities (Capron, 1999) and operational efficiency (Capron, 1999; Capron et al., 1998; Capron et al., 2001). However, Capron and Mitchell (1998) observe that administrative resources such as reporting systems and financial expertise are likely to be transferred not from an acquired firm to an acquiring firm but from the acquiring firm to the acquired firm, no matter how advanced administrative resources an acquired firm has. This is because administrative resources are relatively context-free unlike technical and commercial resources that are location-specific. By transferring an acquiring firm's administrative resources to an acquired firm, the acquiring firm can build a shared organisational system through which the acquiring and acquired firm have access to the knowledge of the other firm (Puranam & Srikanth, 2007).

Extending the issues of knowledge transfer from/to an acquiring firm to/from an acquired firm, Bresman et al. (2010) examine the patterns of knowledge transfer from/to an acquiring firm to/from an acquired firm broken down into early stages (the first two or three years after the M&A completion) and late stages (from the third year to the sixth year after the M&A completion) of post-acquisition. They find that knowledge transfer is limited to the path from an acquiring firm to an acquired firm during the early stages of the post-acquisition process. As the acquired firm becomes stable and it finds themselves secure about personal situation and well-treated by the acquiring firm, the acquired firm supports post-acquisition implementation and participates in knowledge transfer with the acquiring firm. Therefore, knowledge is transferred in both directions from an acquiring firm to an acquired firm and

from the acquired to the acquiring firm, as they step into the stable stages of the post-acquisition process.

An acquiring and acquired firm can create knowledge-based advantages, having immediate access to the broader knowledge resources of the other firm and exploiting them in a new setting. In order for the knowledge-based advantages to be maximised, the acquiring and acquired firm's capabilities to share knowledge with each other is vital. With attempts to capture the drivers of knowledge sharing between an acquiring and acquired firm, existing literature finds that knowledge sharing is determined by following factors : (1) tacit and explicit knowledge (Bresman et al., 1999; Ranft & Lord, 2002); (2) knowledge complementarity (Junni et al., 2015); (3) structural integration (Vaara et al., 2012); (4) previous experience (Capron & Guillen, 2009); (5) cultural differences (Brock, 2005; Sarala & Vaara, 2010; Vaara et al., 2012); and (6) cultural integration (Sarala & Vaara, 2010) and cultural learning (Junni et al., 2015).

Knowledge sharing is affected by the nature of knowledge (Bresman et al., 2010; Ranft & Lord, 2002). Explicit knowledge, which is articulated, codified, and readily accessible through verbal communication and written documents such as patents and blueprints (Ranft & Lord, 2002), is effectively and efficiently shared across organisational boundaries and borders (Bresman et al., 2010). The value of knowledge developed outside a firm and its institutional setting can be particularly high. In order for an acquiring and acquired firm to effectively share knowledge, they should build a sense of a shared identity and belonging (Kogut & Zander, 1996). However, cultural differences between an acquiring and acquired firm may hinder the establishment of a common set of organisational value and beliefs, causing social conflicts and misunderstanding in the process of sharing knowledge across borders (Bresman et al., 2010; Vaara et al., 2012). The articulability and codifiability of knowledge enable the acquiring and acquired firm to share explicit knowledge beyond their environmental constraints (Bresman et al., 2010). Moreover, explicit knowledge can be widely and readily distributed and intensively and instantly exploited among the individuals of the firms (Ranft & Lord, 2002).

Tacit knowledge, which resides in experience, skills, and know-how acquired by organisational members over time (Ranft & Lord, 2002), is difficult to share, because it cannot be shared by using words, numbers, or pictures. Though the tacit form of knowledge often hinders knowledge sharing, it prevents a firm's competitive advantage to be imitated by competitors (Ranft & Lord, 2002). In seeking to understand the conditions for the sharing of tacit knowledge, Bresman et al. (1999) and Ranft and Lord (2002) find that an acquiring and acquired firm can share tacit knowledge by intensive communication and fact-to-face

interactions such as visits and meetings. As an acquiring and acquired firm frequently communicate and interact, they develop a shared identity and a supportive environment, which improve the acquiring and acquired firm's ability to recognise the value of existing knowledge of the other firm and to exploit it (Cohen & Levinthal, 1990). Nevertheless, Ranft and Lord (2002) are concerned about knowledge sharing between an autonomous acquiring and acquired firm. Ranft and Lord (2002) view autonomy as an effective means of an acquired firm preserving its social contexts for knowledge development and innovation capabilities on the one hand but as a hindrance to knowledge sharing between the firms on the other hand. Ranft and Lord (2002) imply the negative effect of autonomy on knowledge sharing based on the assumption that autonomy hinders communication and interaction between an acquiring and acquired firm. However, some studies observe that an acquiring firm can leverage an acquired firm's knowledge and innovation and collaborate with the acquiring firm while the acquiring and acquired firm remain independent from each other (Angwin & Meadows, 2015; Zheng et al., 2016). Thus, it may be too early to underestimate inter-firm knowledge collaboration between an autonomous acquiring and acquired firm and justify little knowledge sharing between them.

In line with the attempts to find the conditions for knowledge sharing inside knowledge itself, the scholars of resource-based theory argue that knowledge complementarity increases an acquiring and acquired firm's capability to share knowledge (Junni et al., 2015). An acquiring and acquired firm that have complementary knowledge allow the new and unique combination of their existing knowledge and complement the existing knowledge of the other firm (Junni et al., 2015). Therefore, an acquiring and acquired firm view the sharing of complementary knowledge as a key to realising knowledge-based advantages. Therefore, the acquiring and acquired firm are motivated to share their existing knowledge with each other and develop their existing knowledge.

In contrast to the attention paid to the nature of knowledge that promotes knowledge sharing between an acquiring and acquired firm (Junni et al., 2015), much previous literature addresses an organisational context and national context, drawing from the perspective of a post-acquisition process (Vaara et al., 2012), organisational learning theory (Capron & Guillen, 2009), and institution-based theory (Brock, 2005; Sarala & Vaara, 2010; Vaara et al., 2012).

First, Vaara et al. (2012) examine structural integration as a means of knowledge sharing across organisational boundaries and borders. They argue that M&As adopting structural integration build a shared organisational system through which an acquiring and acquired firm

have easier access to the knowledge of the other firm and share knowledge with each other, which improves their ability to evaluate the potential value of knowledge of the other firm. In consistent with their argument, Vaara et al. (2012) observe that an integrated acquiring and acquired firm facilitate knowledge sharing.

Second, building from organisational learning theory, Capron and Guillen (2009) identify an acquiring firm's previous experience of M&As as a learning opportunity to develop and reinforce the firm's routines and capabilities. According to organisational learning theory, a firm accumulates knowledge from the success and failure of previous experience and develops the same patterns of behaviour, activities, and decisions that can be applied to similar situations subsequently taking place (Nelson & Winter, 1982). Extending the logic behind organisational routine, Capron and Guillen (2009) argue that an acquiring firm with increased previous experience has an ability to overcome employee resistance towards post-acquisition and inter-firm collaboration towards knowledge sharing. They show that an acquiring firm with previous M&A experience becomes efficient at knowledge sharing.

Finally, institution-based theory emerges as a significant theoretical foundation that advances understanding of knowledge sharing within cross-border M&As (Sarala & Vaara, 2010; Vaara et al., 2012). In accordance with increasing rates of cross-border M&As, knowledge sharing between an acquiring and acquired firm across borders receives great attention as the source of innovation and knowledge development (Ranft & Lord, 2002). This is because knowledge produced by a firm is embedded in its organisational as well as national context (Morosini et al., 1998; Ranft & Lord, 2002). Cross-border M&As, where an acquiring firm purchases an acquired firm outside its home country, enable an acquiring and acquired firm to bring non-redundant and complementary knowledge to the other firm and therefore motivate them to seek the knowledge of the partner firm for the potential for innovation (Sarala & Vaara, 2010; Vaara et al., 2012).

In spite of this positive view on cultural differences, another school of the institution-based theory views cultural differences as a hindrance to knowledge sharing (Bresman et al., 2010; Brock, 2005; Vaara et al., 2012). Based on similarity concerning beliefs and values, people build a bias against the member of an out-group and an attitude of superiority over the out-group, fuelling feelings of hostility and distrust (Stahl & Voigt, 2008). Such 'conquering army syndrome' reinforces social conflicts and thereby hinders knowledge sharing (Bresman et al., 2010; Brock, 2005). Therefore, a group of scholars observe that cultural differences between an acquiring and acquired firm are positively associated with knowledge sharing

(Sarala & Vaara, 2010; Vaara et al., 2012), whereas another group of scholars find that cultural differences between them are negatively associated with knowledge sharing (Bresman et al., 2010; Brock, 2005).

Though cultural differences between an acquiring and acquired firm can have double-edged sword effects (Reus & Lamont, 2009), it is discovered that mutual respect for a partner firm's culture can overcome cultural differences and promote knowledge sharing between an acquiring and acquired firm (Junni et al., 2015; Sarala & Vaara, 2010). Junni et al. (2015) find that mutual understanding of the value of an acquiring firm's and an acquired firm's culture supports knowledge sharing between them. Moreover, Sarala and Vaara (2010) find that cultural integration through changes in either an acquiring or an acquired firm facilitates knowledge sharing, creating a climate of trust and removing mutually negative stereotyping.

Beyond the perception of culture as an organisational and social context in which knowledge is created and shared (Sarala & Vaara, 2010; Vaara et al., 2012), Capron and Guillen (2009) extend the institution-based perspective to national governance institutions. They argue that knowledge sharing is determined by the extent to which shareholders' and employees' rights are protected. In liberal-market economies such as the UK where shareholders' rights are well-protected and managers feel under pressure to serve the interests of the shareholders immediately, an acquiring firm takes a quick action to leverage an acquired firm's knowledge and resources and to bring its shareholders to as much economic benefits of M&A events as possible. By contrast, in coordinated-market economies such as Germany, where employees have strong rights and power to bring a claim against their firm, an acquired firm's employees emerge as an important stakeholder. Because the employees with strong rights tend to pursue low risk, slow growth, and the preservation of the status quo, knowledge sharing, which may force the employees to learn new knowledge and skills or pose a threat to their power, can be resisted. Therefore, knowledge sharing is promoted in M&As by an acquiring firm from a home country protecting its shareholders' rights, whereas knowledge sharing is less observed in M&As of an acquired firm from a host country protecting its employees' rights.

Taken together, it is observed that knowledge resources are often transferred from an acquiring firm to an acquired firm and during the early stages of a post-acquisition process compared to the extent to which knowledge is transferred from the acquired firm to the acquiring firm and during the late stages of the post-acquisition process. Explicit knowledge is shared by means of verbal communication and written documents across firms and national

contexts. In contrast, tacit knowledge, which is difficult to teach and codify, can be shared through frequent interaction and communication. When an acquiring and acquired firm have similar and complementary knowledge, they are motivated to share knowledge with each other with the desire to improve their existing knowledge bases. Structural integration enables an acquiring and acquired firm to build a shared organisational system through which they frequently interact and collaborate, improve an ability to evaluate the knowledge of the other firm, and thereby stimulate knowledge sharing. An acquiring firm with previous experience has an ability to overcome employee resistance and implement post-acquisition, encouraging acquired employees to share knowledge with the acquired firm. Culture emerges as one of the most widely discussed determinant of knowledge sharing because culture is a social context in which knowledge is shared and created. Cultural differences between an acquiring and acquired firm indicate knowledge remote from their typical knowledge bases on the one hand but cultural differences underlie 'we versus they' categorisation on the other hand. While the proponents of cultural differences view them as a stimulus to knowledge sharing with the desire to develop knowledge (Sarala & Vaara, 2010), the opponents of cultural differences view them as the cause of cultural clash disturbing knowledge sharing (Brock, 2005). Finally, in spite of the double-edged sword effects of cultural differences between an acquiring and acquired firm, they can weaken the negative aspects of cultural differences by learning the culture of the other firm.

2.1.2.3. Post-Acquisition Innovation

Not only does an acquiring firm expect cross-border M&As to realise synergy, but it purchases an acquired firm as a vehicle to source external knowledge to innovate and produce new products in response to high technology environments (Ahuja & Katila, 2001; Anand & Delios, 2002; Desyllas & Hughes, 2008). For example, Ahuja and Katila (2001) find that 53% of their M&A observations is innovation-driven M&As. Desyllas and Hughes (2008) observe that an acquiring firm with low R&D productivity tends to participate in innovation-driven M&As. Anand and Delios (2002) identify a tendency for an acquiring firm to purchase an acquired firm with a significantly higher R&D intensity. In spite of the motives for innovation-driven M&As, previous literature is much focused on giving explanations about synergistic M&As (Capron, 1999). Moreover, some literature show that M&As rather decrease R&D investments and innovation outputs, being substituted for internal development of innovation (Hitt et al., 1991; Hitt et al., 1996). In this sense, it is important to provide explanations about post-acquisition innovation in terms of what improves post-acquisition innovation within cross-border M&As and how cross-border M&As contribute to post-acquisition innovation (Grimpe, 2007).

Summarised in Table 2.2, previous literature on post-acquisition innovation is reviewed in accordance with a pre-acquisition process and a post-acquisition process and from the perspectives of theoretical foundations.

Table 2. 2 Determinants of Innovation and Innovation Capabilities in an M&A context and Corresponding References

Theory	Pre-Acquisition Process	Post-Acquisition Process	References
Process Perspectives		Strategic Control and Financial Control	Hitt et al. (1996)
Process Perspectives		Structural Integration	Bauer et al. (2016) Chen et al. (2010) Grimpe (2007)
Organisational Learning Theory		Structural Integration and Autonomy	Kapoor & Lim (2007) Paruchuri et al. (2006) Puranam et al. (2006)
Resource-Based Theory	Firm Size		Cefis & Marsili (2015)
Organisational Learning Theory	Knowledge Size of Acquiring Firms		Desyllas & Hughes (2010)
Organisational Learning Theory	Absolute size of Acquired Knowledge		Ahuja & Katila (2001)
Organisational Learning Theory	Relative size of Acquired Knowledge		Ahuja & Katila (2001) Cloudt et al., (2006)
Organisational Learning Theory	Similar Organisational Routines		Kapoor & Lim (2007)
Organisational Learning Theory	Knowledge Similarity		Ahuja & Katila (2001) Desyllas & Hughes (2010) Lee & Kim (2016) Kapoor & Lim (2007) Cloudt et al., (2006) Makri et al. (2010)
Resource-Based Theory	Knowledge Similarity		Ahuja & Katila (2001) Colombo & Rabbiosi (2014) Makri et al. (2010) Lee & Kim (2016) Cassiman et al. (2005) Cloudt et al., (2006)
Resource-Based Theory	Knowledge Complementarity		Makri et al. (2010) Cassiman et al. (2005)

As shown in Table 2.2, a large amount of previous literature on post-acquisition innovation within M&As focuses on pre-acquisition conditions for innovation within various theoretical lens. Drawing from resource-based theory, Cefis and Marsili (2015) attribute differences in the design of innovation strategy and innovation outcomes to firm size. According to Cefis and Marsili (2015), large firms, which can support high R&D and innovation costs, participate in M&As to develop incremental innovation based on their existing knowledge sets. In contrast, small and medium-sized firms, which make lower investment in R&Ds and innovation due to lacks of financial resources and capabilities to deal with innovation uncertainty, participate in M&As to overcome 'innovation threshold' and produce pioneering innovations. Based on the characteristics of large firms and small firms, Cefis and Marsili (2015) compare the innovation activities of small acquiring firms with those of large acquiring firms and find that large acquiring firms are consistent innovators, whereas small acquiring firms are infrequent or non-innovators.

The school of organisational learning theory argues that a recipient's ability to "recogni[s]e the value of new information, assimilate it, and apply it to commercial ends", which is understood as absorptive capacity (Cohen & Levinthal, 1990, p. 128), maximises organisational learning and innovation (Ahuja & Katila, 2001; Cloudt et al., 2006; Desyllas & Hughes, 2010; Kapoor & Lim, 2007; Lee & Kim, 2016; Makri et al., 2010). When the knowledge bases and routines of an acquiring firm are similar to those of an acquired firm (Ahuja & Katila, 2001; Cloudt et al., 2006; Desyllas & Hughes, 2010; Kapoor & Lim, 2007; Lee & Kim, 2016), they have better understanding of the potential value of the knowledge of the other firm and facilitate an effective integration of newly acquired knowledge into their existing knowledge bases. The size of knowledge bases indicates a firm's capability to acquire external knowledge developed outside the firm and leverage it internally. When an acquiring or an acquired firm have large knowledge bases, they have high levels of absorptive capacity and exploit the knowledge acquired from the other firm for internal development of innovation (Ahuja & Katila, 2001; Desyllas & Hughes, 2010). In a similar vein, if the size of an acquired firm's knowledge is comparatively smaller than that of an acquiring firm's knowledge, the evaluation and assimilation activities of the knowledge of the partner firm become efficient (Ahuja & Katila, 2001). Therefore, an acquiring and acquired firm with high absorptive capacity of the other firm's knowledge can effectively use and absorb the knowledge acquired from the other firm into their existing knowledge bases, which therefore improves post-acquisition innovation.

Though knowledge similarity is the source of effective organisational learning and innovation from the perspective of organisational learning theory, the school of resource-

based theory is concerned about too much similarity between an acquiring and acquired firm (Barney, 1988). According to resource-based theory, a firm's competitive advantage is attributable to the possession of private, valuable and non-imitable resources (Barney, 1991). In order for a firm to sustain its competitive advantage, the acquisition of complementary knowledge, which realises complementary benefits through the combination of complementary operations (Larsson & Finkelstein, 1999), complementary resources (Capron et al., 1998), and complementary strategy (Kim & Finkelstein, 2009), is vital for the renewal of the firm's competitive advantage (Sarala & Vaara, 2010). High levels of knowledge similarity beyond its optimal levels can create redundancy that limits novel combination of existing knowledge and the creation of radically new knowledge (Ajuja & Katila, 2001; Colombo & Rabbiosi, 2014; Lee & Kim, 2016; Makri et al., 2010). Alternatively, the school of resource-based theory pays attention to knowledge complementarity as a catalyst for innovation (Cassiman et al., 2005; Makri et al., 2010). When an acquiring and acquired firm have complementary knowledge, they combine their existing knowledge in a more complex and creative manner and create breakthrough knowledge (Cassiman et al., 2005; Makri et al., 2010). In this sense, knowledge complementarity is the source of innovation from the resource-based perspectives.

In addition to the focus on the post-acquisition determinants of post-acquisition innovation, a body of scholars offers the post-acquisition conditions for post-acquisition innovation such as the post-acquisition structures of structural integration and autonomy (Grimpe, 2007; Kapoor & Lim, 2007; Puranam et al., 2006) and strategic control and financial control exercised over an acquired firm (Hitt et al., 1996). Building from organisational learning theory, Paruchuri et al. (2006) and Kapoor and Lim (2007) perceive structural integration as a disruption of an acquired firm's organisational routines and social context in which knowledge is transferred and created. They find that structural integration impairs an acquired firm's innovation capabilities and innovation outputs in the end. Further, Puranam et al. (2006) argue that the effect of structural integration on innovation outputs is dependent on the development stage of an acquired firm's innovation trajectories. When an acquired firm is in more exploration-intensive stages, autonomy is appropriate organisational structure, enabling the acquired firm to preserve its innovation capabilities. Put differently, structural integration, which is often implemented by forcing an acquired firm to align its organisational design, processes, and systems with those of an acquiring firm, disrupts an acquired firm's routines and innovative capabilities. In contrast, autonomy granted to an acquired firm avoids

disturbing its innovation capabilities. Therefore, structural integration impairs an acquired firm's innovation, whereas autonomy accelerates innovation.

While there is a general consensus that autonomy has a positive effect on innovation outputs (Paruchuri et al., 2006), the role of structural integration is somewhat inconsistent. The school of organisational learning thought views structural integration as a sense of disruption and loss demotivating an acquired firm and leading its executives and employees to leave the firm (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). In contrast, the school of a post-acquisition process views structural integration as an instrument for facilitating interaction and collaboration towards innovation activities (Chen et al., 2010) through the establishment of a shared identity (Grimpe, 2007). Moreover, structural integration of an acquired firm into an acquiring firm improves their innovation capabilities and outcomes, building structural linking and standardised systems across the functional departments and R&D units of the acquiring and acquired firm (Grimpe, 2007). In a similar vein, Hitt et al. (1996) argue that strategic control exercised over an acquired firm can lead an acquiring firm to make more managerial commitment to innovation and make high levels of investment in R&D and risk sharing. Additionally, in M&As where an acquiring firm exercises financial control over an acquired firm, the acquiring firm establishes objective criteria against which the acquired firm's performance is evaluated. In such M&As, the acquired firm is motivated to search for the source of innovation, which leads to post-acquisition innovation (Hitt et al., 1996).

To summarise, an increasing amount of previous literature examines innovation capabilities and post-acquisition innovation within M&As mainly from the perspectives of organisational learning theory (Ahuja & Katila, 2001; Desyllas & Hughes, 2010), resource-based theory (Cassiman et al., 2005), and a process perspective (Grimpe, 2007; Hitt et al., 1996). The previous literature finds that post-acquisition innovation can be predicted by the pre-acquisition conditions of firm size (Cefis & Marsili, 2015), knowledge size (Ahuja & Katila, 2001; Desyllas & Hughes, 2010), similarity in routines (Kapoor & Lim, 2007), similarity in knowledge (Cloudt et al., 2006), and knowledge complementarity (Makri et al., 2010). Small acquiring firms less frequently launch and produce innovation than large firms. In M&As where an acquiring and acquired firm increase their knowledge size and have similar knowledge and routines, they have a better ability to evaluate the potential value of the knowledge of the other firm and assimilate it, which facilitates post-acquisition innovation. Moreover, the smaller the size of the knowledge bases of an acquired firm than that of an acquiring firm, the less disruptive effects on the acquired firm's innovation capabilities. Therefore, the M&As of

an acquired firm with smaller knowledge size can facilitate post-acquisition innovation. Beyond the dominant application of absorptive capacity and organisational learning theory to the logic behind innovation within an M&A context, the scholars of resource-based view insist that knowledge similarity indicates redundancy and only plays a role as a replacement. Alternatively, they highlight knowledge complementarity and argue that it is only knowledge complementarity that allows the novel combination of knowledge of an acquiring and acquired firm and produces post-acquisition innovation.

Moving to the post-acquisition conditions for innovation, existing literature on M&As pays attention to the post-acquisition structures of structural integration and autonomy. In M&As adopting structural integration, an acquiring firm disrupts an acquired firm's routines and knowledge-creation context and therefore impairs its innovation capabilities. In contrast, in M&As adopting autonomy, an acquired firm can preserve its organisational routines and context in which knowledge is created and therefore sustain its innovation capabilities. Although structural integration is viewed as an impediment to an acquired firm's innovation capabilities embedded in its social context from the organisational behaviour perspective (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006), it is viewed as a shared organisational system facilitating effective and efficient knowledge sharing, communication, and collaboration from the perspective of a post-acquisition process (Bauer et al., 2016; Grimpe, 2007). Therefore, the effect of structural integration on post-acquisition innovation is viewed as conflicting each other within organisational learning theory.

Since exploitation and exploration was conceptualised (Levinthal & March, 1993; March, 1991), there has been a growing tendency for existing literature on M&As to develop understanding of post-acquisition innovation within the exploitation and exploration paradigm (Angwin & Meadows, 2015; Miozzo et al., 2016; Puranam et al., 2006; Stettner & Lavie, 2013). In line with the tendency, this study examines post-acquisition innovation in the form of exploitation and exploration innovation and review the relevant literature in the following section.

2.1.2.3.1. Exploitation Innovation and Exploration Innovation in M&As

Extending M&A issues from an innovation-based perspective, another research stream has appeared on exploration and exploitation (Phene et al., 2012; Stettner & Lavie, 2013), which have been developed since the publication of March's (1991) article. Exploitation refers to the leveraging of existing knowledge and resources for incremental organisational change such as the refinement and extension of exiting products. Exploration refers to the

development and commercialisation of new products for radical organisational changes (March, 1991). Though a great deal of extant literature gives understanding of the exploitation-exploration paradigm related to new product development (Danneels & Sethi, 2011; Tsinopoulos & Al-Zu'bi, 2014), technological innovation (Benner & Tushman, 2003), and financial performance (Belderbos et al., 2010), the concepts of exploration and exploitation innovation are relatively new in existing M&A literature (Angwin & Meadows, 2015; Miozzo et al., 2016; Puranam et al., 2006; Stettner & Lavie, 2013). For example, Puranam et al. (2006) examine the influence of structural integration and autonomy on an acquired firm's exploration-innovation activities. Angwin and Meadows (2015) examine how structural integration and autonomy facilitate exploitation and exploration innovation. Miozzo et al. (2016) show how the combination of similar and complementary technology and capabilities to discover and develop contributes to exploitation and exploration innovation in an M&A context. Stettner and Lavie (2013) compare firm performance achieving both exploitation and exploration innovation within M&As with firm performance relying on exploration innovation within M&As. The application of exploitation and exploration innovation to M&As enriches our understanding of the conditions under which innovation is driven. However, there is still a gap concerning performance effects in cross-border M&As realising exploitation and exploration innovation and the realisation of exploitation and exploration within knowledge-based theory. A detailed discussion of this research gap is followed in the subsequent section.

2.1.3. Research Gaps

Previous studies on structural integration, autonomy, knowledge transfer and knowledge sharing, and exploitation and exploration innovation suggest future research avenues. First, traditional perspectives on M&As frame post-acquisition structure based on structural integration and autonomy (Haspeslagh & Jemison, 1991). Haspeslagh and Jemison (1991) introduce post-acquisition typologies consisting of structural integration and autonomy. Depending on the need to realise task interdependence between an acquiring and acquired firm and the need for autonomy over the acquired firm's tasks and decision-making, the acquiring firm designs its post-acquisition structure. Identifying post-acquisition structure as decisive for M&A success, much literature is focused on explaining the effects of structural integration and autonomy on M&A performance (Cording et al., 2008; Datta & Grant, 1990; Zollo & Singh, 2004). Because of the negative correlation between structural integration and autonomy, previous literature asks structural integration and autonomy at the same time, integrating the measures of structural integration at one polar extreme into those of autonomy at the other polar extreme (Paruchuri et al., 2006) and building on the assumption

that the measures of structural integration correspond to those of autonomy removal (Puranam et al., 2006). However, structural integration and autonomy are different concepts in light of the way of producing post-acquisition outcomes and thereby have a different meaning of their contribution to M&A success. Therefore, it is vital to investigate structural integration and autonomy separated from each other and how two differing post-acquisition structures contribute to M&A outcomes.

Second, identifying structural integration and autonomy of an acquired firm as decisive for M&A success, a large body of previous literature investigates the effect of structural integration and autonomy on M&A performance (Puranam & Srikanth, 2007; Saxton & Dollinger, 2004; Very et al., 1997). Much of the relevant literature hypothesises the direct path from structural integration and autonomy to M&A performance (Saxton & Dollinger, 2004; Very et al., 1997). They find that integrating the functional activities of an acquired firm into those of an acquiring firm (i.e., structural integration) and separating the operations of an acquired firm from those of an acquiring firm (i.e., autonomy) lead to superior M&A performance (Saxton & Dollinger, 2004; Very et al., 1997). However, some studies argue that structural integration and autonomy are the means of improving M&A outcomes through post-acquisition conduct (Cording et al., 2008) such as innovation (Capron, 1999). In this regard, it is argued that structural integration and autonomy are the context in which an acquiring and acquired firm exhibit post-acquisition conduct and then produce M&A outcomes. That is, the relationships between structural integration and autonomy and M&A outcomes are established not directly but via mediating variables that represent post-acquisition conduct (Cording et al., 2008) such as post-acquisition innovation (Capron, 1999). Identifying a need to construct mediating mechanisms of the relationships between post-acquisition structure and M&A outcomes, this study answers the question of how structural integration and autonomy affect M&A outcomes through post-acquisition innovation.

Underlying the pursuit of cross-border M&As of an acquiring and acquired firm is post-acquisition innovation. An acquiring and acquired firm with unique organisational knowledge, resources, and skills embedded in their own organisational culture and national context can offer the source of innovation to each other (Morosini et al., 1998; Ranft & Lord, 2002). Accordingly, post-acquisition innovation is perceived as a major motive for M&A participation and widely discussed in previous literature on post-acquisition innovation (Ahuja & Katila, 2001; Desyllas & Hughes, 2010). Although the relevant literature implicitly and explicitly assumes that knowledge-based activities and capabilities are on the basis of post-acquisition innovation (Bauer et al., 2016), it takes into little consideration the knowledge-based activities

and capabilities of an acquiring and acquired firm and provides no direct evidence on them. For example, a dominant number of extant studies within resource-based theory and organisational learning theory focus on knowledge size (Ahuja & Katila, 2001; Desyllas & Hughes, 2010), the possession of similar knowledge and routines (Ahuja & Katila, 2001; Desyllas & Hughes, 2010; Kapoor & Lim, 2007), and the possession of complementary knowledge (Makri et al., 2010) as pre-acquisition conditions for post-acquisition innovation. In other words, there is an increasing demand for future research investigating post-acquisition innovation within knowledge-based theory. In seeking to fill the gap, this study provides knowledge-based explanations about post-acquisition innovation.

Since scholars of organisational learning theory introduced the exploitation-exploration paradigm (March, 1991), it has been widely applied to innovation and firm performance within organisational learning theory (Hoang & Rothaermel, 2010; Rothaermel & Alexandre, 2009), network theory (Stadler et al., 2014), knowledge-based theory (Bierly et al., 2009; Im & Rai, 2008), and resource-based theory (Danneels, 2002; Vorhies et al., 2011). Responding to growing trends towards exploration and exploitation of innovation, some M&A studies employ the exploitation-exploration paradigm (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). On the other hand, the studies are not sufficient to meet interests in how exploitation and exploration innovation contribute to M&A success and exploitation and exploration innovation are realised within knowledge-based theory.

For example, drawing from organisational learning theory, Stettner and Lavie (2013) compare firm performance achieving both exploitation and exploration innovation within M&As with firm performance achieving exploration innovation within M&As. Angwin and Meadows (2015) study M&As achieving exploitation and exploration innovation through interdependence between structural integration and autonomy. Phene et al. (2012) investigate the effects of an acquiring firm's and an acquired firm's similarity and uniqueness in knowledge and technology on exploitation and exploration innovation. Drawing from organisational learning theory and resource-based theory, Miozzo et al. (2016) study the achievement of exploitation and exploration innovation depending on the combination of similar and complementary knowledge and capability. These studies give insights into exploitation and exploration innovation within cross-border M&As (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). However, it is still unclear of how exploitation and exploration innovation lead to M&A success. Moreover, little literature provides knowledge-based explanations about the realisation of exploitation and exploration innovation, though innovation is the outcomes of knowledge-based activities and determined

by knowledge-based capabilities. For these reasons, this study fills the research gap, providing knowledge-based explanations about the realisation of exploitation and exploration innovation and discussing their effects on M&A outcomes.

Existing studies on post-acquisition innovation significantly rely on patent outputs (Ahuja & Katila, 2001; Hitt et al., 1991; Makri et al., 2010) and R&D expenditure (Desyllas & Hughes, 2010) as a proxy for post-acquisition innovation. Moreover, existing studies view innovation as an extension of exploitation and exploration innovation (Atuahene-Gima & Murray, 2007; Mu, 2015; Tsinopoulos & Al-Zu'bi, 2014) and NPD (Grimpe, 2007). However, the relevant studies provide limited insights into the performance of post-acquisition innovation such as the finance and market performance of new products (i.e., NPD performance) (c.f., Chen et al., 2010). Therefore, future research studying the performance of post-acquisition innovation can provide richer understanding of post-acquisition innovation and M&A outcomes. This study fills the gap, assessing NPD performance as another dimension of M&A outcomes alongside M&A performance and discussing M&A success from the perspective of NPD performance.

In summary, existing literature has limitations in the following ways. First, some studies assume that structural integration is the opposite end of autonomy in a continuum and measure structural integration and autonomy at the same time (Paruchuri et al., 2006). However, structural integration and autonomy are two differing post-acquisition structures that have different effects on M&A outcomes and therefore need independent measures from each other. Second, a number of existing studies agree that structural integration and autonomy are essential for M&A success and attempt to understand the direct effects of post-acquisition structure on M&A performance, building from the efficiency perspective of M&As (Sinkovics et al., 2015; Zollo & Singh, 2004) and a relative-standing perspective (Very et al., 1997; Weber, 1996). However, they provide limited understanding of how structural integration and autonomy affect M&A outcomes (Sinkovics et al., 2015; Very et al., 1997; Weber, 1996; Zollo & Singh, 2004). In a similar vein, some studies argue that structural integration and autonomy affect M&A performance not directly but via mediating variables that represent post-acquisition conduct (Cording et al., 2008) such as innovation (Capron, 1999). Third, even though post-acquisition innovation is realised by knowledge-transfer activities between an acquiring and acquired firm and determined by their capabilities to share knowledge with each other, little literature on post-acquisition innovation discusses how the knowledge-based activities and capabilities of an acquiring and acquired firm affect post-acquisition innovation. Fourth, post-acquisition innovation is often discussed in the form of

exploitation and exploration innovation within organisational learning theory and resource-based theory (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). However, how exploitation and exploration innovation are transformed into M&A outcomes is little discussed. Moreover, existing literature provides limited understanding of the realisation of exploitation and exploration innovation within knowledge-based theory (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). Finally, little literature discusses the performance of post-acquisition innovation such as NPD performance and provides innovation-based insights about M&A success, although post-acquisition innovation is viewed as one of the most recognised motives for M&A participation.

Identifying the limitations of existing literature on M&As, this study fills the gaps: by (1) building and measuring the separate constructs of structural integration and autonomy; (2) building innovation-based mediating mechanisms in which structural integration and autonomy affect M&A outcomes via post-acquisition innovation in the form of exploitation and exploration innovation; (3) providing knowledge-based explanations about exploitation and exploration innovation; and (4) discussing M&A outcomes from the perspectives of M&A performance and NPD performance.

Chapter 3: Conceptual Model and Hypotheses Development

3. Hypotheses Development

Cross-border M&As where an acquiring and acquired firm create knowledge-based advantages by transferring, sharing, and combining their knowledge and develop their competitive position are an effective mode of sustaining a firm's competitive advantage (Bresman et al., 2010). However, a large number of M&As end up as failures, the cause of which is often attributed to poor synergy creation and insufficient post-acquisition innovation (Makri et al., 2010; Stahl & Voigt, 2008). Therefore, it is very plausible that inappropriate structuring such as poorly integrating a new acquisition or an acquired firm deteriorates synergy creation, knowledge sharing and for forth and thereby causes M&A failures (Birkinshaw et al., 2000). These problems are likely exacerbated in cross-border M&As because of greater complexity in managing and coordinating such activities. In seeking to better understand how to make a success of cross-border M&As, this chapter develops an integrative framework of a post-acquisition mechanism of M&A success from an innovation-based perspective and a knowledge-based perspective. This chapter develops a theoretical understanding of (1) exploitation and exploration innovation as mediators of the relationships between post-acquisition structures (i.e., structural integration and autonomy) and M&A and NPD performance and (2) knowledge-based mediators of knowledge transfer and knowledge sharing in the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation. In so doing, this work seeks to establish a detailed theoretical framework that reveals complex challenges in securing value from cross-border M&A activities and sheds new light on the intricacies behind cross-border M&A success in terms of M&A and NPD performance.

3.1. Post-Acquisition

From a process perspective, post-acquisition is a whole process in which an acquiring and acquired firm communicate and collaborate with each other after the completion of their cross-border M&A deal (Birkinshaw et al., 2000; Puranam et al., 2009). At the heart of the understanding of post-acquisition are two differing organisational structures: 'structural integration' and 'autonomy'.

Structural integration, which is referred to as the combination of operational activities across functional units of an acquiring and acquired firm (Puranam et al., 2009; Zaheer et al., 2013), is implemented to establish shared operational processes, procedures and systems across the firms and to run as a single entity (Grimpe, 2007; Olie, 1994). Under the situation in which an acquiring firm aligns its functional operations with those of an acquired firm, they

can remove redundancy and reconfigure their existing business and resources and therefore improve operational efficiency (Datta, 1991). In contrast, under the situation in which an acquiring and acquired firm keep their operations separate (i.e., autonomy), they diminish opportunities to improve operational efficiency and thereby limit opportunities to realise the benefits that structural integration can bring about (Lin, 2014), but may gain in other ways such as the opportunity to continue (and improve) their own best practices or pursue their own opportunities. Thus, post-acquisition structures, structural integration and autonomy, induce knowledge flows within an acquiring and acquired firm albeit towards relatively different ends (one focus on efficiency and the other individual effectiveness).

Autonomy, which is defined as discretion over decision-making authority given to an acquired firm in the context of M&As (Lubatkin et al., 1999), represents an acquired firm's relative standing (Hambrick & Cannella, 1993; Lubatkin et al., 1999). M&As create "an aura of conquest", giving an impression of the dominance of an acquiring firm and its superiority over an acquired firm (Hambrick & Cannella, 1993, p. 735). Such perceptions about an acquired firm's lower-status position and a sense of alienation become more distinct when autonomy is removed (Hambrick & Cannella, 1993; Very et al., 1997). When an acquiring firm removes an acquired firm's discretion over strategy, systems, and procedures, the acquired firm's relative standing is diminished (Hambrick & Cannella, 1993; Lubatkin et al., 1999). Diminished relative standing suggests that the extent to which an acquiring firm behaves in a dominant manner towards an acquired firm is high (Frank, 1985). Accordingly, acquired employees feel a loss of identity (Lubatkin et al., 1999). In contrast, when an acquired firm is given great autonomy, its acquired employees experience less feelings of diminished relative standing and get motivated and willing to commit themselves to collaboration with their acquiring firm (Hambrick & Cannella, 1993). Therefore, autonomy facilitates collaborating behaviour on the side of an acquired firm.

During a post-acquisition process, an acquiring and acquired firm communicate and collaborate with each other in the context in which the acquiring and acquired firm are integrated or stay independent of each other (i.e., autonomy). Depending on the choice of post-acquisition structure, the way in which an acquiring and acquired firm exhibit post-acquisition conduct differs and therefore what their M&A event brings about differs. Thus, an important part of post-acquisition involves making a decision on if an acquiring firm integrates an acquired firm's functional activities into its own operation processes or grants autonomy to the acquired firm. In this regard, this study conceptualises post-acquisition structure as two differing structural choices of structural integration and autonomy (Zaheer et al., 2013).

3.2. M&A Performance and NPD Performance

Investing firms participate in cross-border M&As not with a single purpose in mind but multiple ones, including economic, financial, strategic, and organisational perspectives. Walter and Barney (1990) give 20 M&A goals that can be summarised as follows: (1) increases in operational efficiency (Capron, 1999; Datta, 1991); (2) increases in market power, market share, and reputation (Dranove & Shanley, 1995; Homburg & Bucerius, 2005; Larsson & Finkelstein, 1999); (3) the acquisition and leveraging of knowledge and resources of a partner firm (Brock, 2005; Capron, 1999); and (4) risk reduction (Lubatkin & O'Neill, 1987). These goals are in general pursued with the desire to attain financial benefits and improve market value at the same time. Accordingly, M&A performance is viewed from the financial and market perspectives and measured as the financial and market indicators of performance (see Chapter 4, Section 4.4.4.1.3).

Not only does this study focus on financial and market performance that cross-border M&As produce but it also examines their New Product Development (NPD) performance as a proxy for M&A success and post-acquisition innovation success. Post-acquisition innovation is often seen as a strong motive for M&A participation (Desyllas & Hughes, 2008). However, little literature discusses how post-acquisition innovation contributes to M&A success (Ahuja & Katila, 2001; Desyllas & Hughes, 2010; Hitt et al., 1991; Makri et al., 2010). Moreover, the relevant literature limits the measure of post-acquisition innovation to patent outputs (Ahuja & Katila, 2001; Hitt et al., 1991; Makri et al., 2010) and R&D expenditure (Desyllas & Hughes, 2010), taking into little consideration the performance of post-acquisition innovation. From this point of view, this study assesses innovation performance by the financial and market performance of new products (i.e., NPD performance) and examines M&A success from the standpoint of M&A performance as well as NPD performance.

In this study, I do not hypothesise the direct effects of structural integration and autonomy on M&A and NPD performance based on the logic behind Structure-Conduct-Performance (SCP) (McWilliams & Smart, 1995), Cording et al.'s (2008) arguments about casual ambiguity, and Gibson and Birkinshaw's (2004) mediation mechanisms of exploitation and exploration innovation. Though originally the SCP paradigm revolved around industry structure (Bain, 1956), it has evolved to also become part of the strategy/structure and structure/strategy debate by revolving around organisational structure (McWilliams & Smart, 1995). According to the SCP paradigm, a firm's structure is designed in response to market conditions such as the number and size of competitors, which then affects firm conduct (strategy) and then firm performance in the end (McWilliams & Smart, 1993, 1995). In other

words, the chosen organisational structure guides the firm towards appropriate conduct, and this explains performance differences among firms (McWilliams & Smart, 1995). Extending the reasoning behind the SCP paradigm, this study argues that post-acquisition structure does not directly affect performance as it is dependent on firm conduct, specifically, what the merging firms choose to do after adopting structural integration or autonomy. Therefore, this study insists on developing mediation mechanisms explaining firm performance and how this contributes to theorising about the relationships between post-acquisition structure (i.e., structural integration and autonomy), post-acquisition conduct (exploitation and exploration innovation), and performance (M&A and NPD performance).

According to Cording et al. (2008), the relationships between integration decisions and M&A performance are established not directly, but in a manner in which there are mediating variables between them. This is because post-acquisition involves ambiguity about the causal link between integration decisions and performance outcomes. The scholars suggest building a series of mediation mechanisms to reduce causal ambiguity in the relationship between the decision on post-acquisition structure and M&A performance.

In a similar vein, Gibson and Birkinshaw (2004) insist in the construct of mediation mechanisms of exploitation and exploration innovation. Because exploitation and exploration innovation are time-consuming and ambiguous processes, the organisation of a firm's capabilities and processes needed to facilitate the relevant innovation outcomes does not directly produce firm performance but contributes to the realisation of exploitation and exploration innovation and then achieve firm performance.

Following their suggestion, this study enriches understanding of post-acquisition through constructing mediation mechanisms and focuses on answering the question of how the post-acquisition structures of structural integration and autonomy affect M&A and NPD performance through exploitation and exploration innovation, and, furthermore, explaining how structural integration generates exploitation innovation, and autonomy generates exploration innovation, through knowledge transfer and knowledge sharing.

3.3. Exploitation and Exploration Innovation and Knowledge-Based Theory

This study aims to explain how successful M&A and NPD performance are driven in accordance with the implementation of an acquiring firm's decision to structurally integrate or give autonomy to an acquired firm. This study argues that the realisation of exploitation innovation or exploration innovation is vital for sustainable firm performance and firm survival,

following the literature on organisational ambidexterity (March, 1991). Moreover, this study argues that an acquiring and acquired firm must facilitate the transfer, sharing, and combination of knowledge between them for innovation creation and advancing superior performance, drawing from knowledge-based theory (Grant, 1996a). Therefore, this study incorporates exploration and exploitation innovation into a conceptual model as the mediatory causes of M&A and NPD performance. To this end, I view knowledge transfer and knowledge sharing as mediation mechanisms in improving an acquiring and acquired firm's exploitation and exploration innovation. Ultimately, I argue, structural integration and autonomy are not likely to be sufficient conditions to advance superior performance alone. Rather, there are indirect effects arising from exploitation and exploration innovation that trigger superior performance. It is important then to examine the innovation activities of an acquiring and acquired firm as the structural approach adopted (structural integration or autonomy) determines the application of knowledge during the post-acquisition process. Therefore, structural integration and autonomy are central to a framework of post-acquisition, and combined with innovation-based insights and knowledge-based insights, should provide richer performance implications for this study.

I proceed with a discussion of exploitation and exploration innovation and hypothesise their roles in translating into performance outcomes from structural integration and autonomy. Subsequently, knowledge-based theory is used to inform these hypotheses and develop knowledge-based mediators of knowledge transfer and knowledge sharing in generating post-acquisition innovation from structural integration and autonomy.

3.3.1. Exploitation Innovation and Exploration Innovation

Post-acquisition innovation is a major motive for M&A participation (Ahuja & Katila, 2001; Cassiman et al., 2005; Desyllas & Hughes, 2008). An acquiring firm purchases a firm with larger R&D intensity to learn its advanced innovation capabilities (Anand & Delios, 2002). Merging or acquiring a firm in the same or complementary technological fields, an acquiring firm achieves R&D efficiency through the elimination of redundancy and develops new knowledge and technologies (Cassiman et al., 2005; Makri et al., 2010). Nevertheless, it is often observed that M&As do not increase R&D investment levels and patent outputs but impair innovation, being merely substituted for internal development of innovation (Cassiman et al., 2005; Hitt et al., 1991). Accordingly, innovation emerges as one of the most prevalent issues in existing literature on M&As (Ahuja & Katila, 2001; Cassiman et al., 2005; Cloudt et al., 2006; Desyllas & Hughes, 2010; Hitt et al., 1991; Makri et al., 2010). In line with a tendency where academics expand their interest in post-acquisition innovation towards March's

exploitation and exploration innovation (Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013), this study addresses post-acquisition innovation in the form of exploration and exploitation innovation.

“Exploitation” refers to the innovation processes of leveraging of existing knowledge, resources, and capabilities (Atuahene-Gima, 2005; Benner & Tushman, 2002). Getting involved in activities characterised by local search, standardisation, speed, refinement, routinisation, efficiency, and productivity (Benner & Tushman, 2002; March, 1991), exploitation improves efficiency of a firm’s existing innovation activities and solves existing problems (Atuahene-Gima, 2005; Jansen et al., 2006). Therefore, the outcomes of exploitation are focused on decreases in variation in newness and scope and improvements in adaptation to current environments (Burgelman, 2002; March, 1991).

“Exploration” refers to the innovation processes of developing new knowledge, resources, and capabilities (Atuahene-Gima, 2005; Benner & Tushman, 2002). Getting involved in activities characterised by distant search, risk taking, experimentation, flexibility, and discovery (Benner & Tushman, 2002; March, 1991), exploration solves latent problems and pursues new knowledge (Benner & Tushman, 2002). Therefore, exploration turns firms flexible to external environmental changes and offers new opportunities to serve emerging customers and markets (Atuahene-Gima, 2005; Benner & Tushman, 2002). The outcomes of exploration innovation are focused on increases in the variation of existing knowledge and capabilities and improvements in adaptation to changing environments (Burgelman, 2002; March, 1991).

Applying the conceptualisation of exploitation and exploration understood in previous literature to a cross-border M&A context (Atuahene-Gima, 2005; Benner & Tushman, 2002; Jansen et al., 2006), this study classifies exploitation and exploration by the extent to which an acquiring and acquired firm build on or depart from their existing knowledge and products and solve problems for existing or emerging customers and markets. “Exploitation innovation” in this study is the innovation outcomes of exploitation such as increases in efficiency and incremental improvements in existing products across an acquiring and acquired firm. “Exploration innovation” is the innovation outcomes of exploration such as the implementation of experimentations and the commercialisation and development of new products across an acquiring and acquired firm.

3.3.1.1. The Indirect Effects of Exploration and Exploitation Innovation within Cross-Border M&As

Exploitation innovation revolves around efficiency-oriented activities in existing products, whereas exploration innovation involves flexibility-oriented activities and radical changes in product profiles (March, 1991). As these two types of innovation are contradictory, they have different goals, operational processes, and capabilities (Ho & Lu, 2015; Lavie et al., 2011). Thus, it is often argued that it is difficult for a firm to maintain two different types of organisational structure due to limited organisational resources (Ho & Lu, 2015; Lavie et al., 2011; Voss & Voss, 2013). Voss and Voss (2013) show that the less resources a firm has, the more likely it is to allocate its resources to one type of innovation. Moreover, Lavie et al. (2011) argue that dual organisational structures within a single firm may cause conflicts coming from competing cultures, goals, and systems, the results of which can outweigh the benefits of designing dual organisational structures and realising both exploitation and exploration innovation. Ho and Lu (2015) insist that dual organisational structures within a single firm divert its managerial attention and constrain its optimal use of resources, providing evidence that dual organisational structures within the same firm impair firm performance. In line with these findings and arguments about dual organisational structures, Stettner and Lavie (2013) show that reliance on consistent innovation within M&As leads to better firm performance than reliance on two different forms of innovation within M&As. Based on these arguments and empirical results, this study argues that post-acquisition, firms should implement appropriate structure of either structural integration or autonomy and pursue one type of innovation activities. Thus, structural integration and autonomy are discrete choices for structuring post-acquisition conduct during the post-acquisition process and, I argue, the choice will impact on the innovation activities the firm can reasonably pursue going forward.

Exploitation innovation, within which a firm keeps its strategic focus on the leveraging of existing knowledge and products and a search for solutions to existing problems, requires organisational structure that integrates its operations (Jansen et al., 2006). Under structural integration, a firm can standardise operation processes and products and facilitate efficiency in decision-making, information-processing, problem-solving, and knowledge application across its subsidiaries (Adler et al., 1999b; Jansen et al., 2006; Olson et al., 2005). Streamlining production processes and effectively allocating people and knowledge to solving existing problems (Barki & Pinsonneault, 2005; Nickerson & Zenger, 2004), structural integration enables a firm to generate cost-saving effects across its value chain, identify requirements for upgrading existing products, and develop its products further within the scope of its current

knowledge bases. Accordingly, it is necessary for a firm with an exploitation-seeking strategy, or seeking to improve upon its exploitation innovation, to align its organisational units tightly to realise economies of scale and improve existing product domains. That is, structural integration appears the most appropriate approach for a firm realising exploitation innovation (Puranam et al., 2006).

Exploration innovation, within which a firm focuses its strategy on a search for new ideas and solutions beyond its current knowledge sets and solves non-routine and emerging problems (Adler et al., 1999a; Olson et al., 2005), requires organisational structure that encourages flexibility in opportunity-seeking. When environments about new customers and markets' demands are uncertain, there is a great need of a firm for autonomy (Burgelman, 2002; Nakata & Im, 2010). When a firm is allowed to make independent decisions about task processes and have control over knowledge flows, collective responsibility and accountability for work done increase within the firm, which enhances the commitment of its organisational units to communication and willingness to collaborate with others (Haas, 2010; Nakata & Im, 2010). Under such collaborative environments, the firm can process a large amount of knowledge and enhance the quality and quantity of problem-solving ideas (Sheremata, 2000). As a result, autonomy improves a firm's innovation capability to conduct experiments and develop breakthrough innovations and products. Through exploration innovation, a firm can ensure its viability and competitiveness in an increasingly turbulence environment. Post-acquisition, it is concluded that exploration innovation requires autonomy in order to prosper.

Based on the logics behind the requirements of organisational structure for exploitation and exploration innovation, it is reasonable to argue that structural integration in cross-border M&As is an efficiency-oriented structure attuned to exploitation innovation, while autonomy in cross-border M&As is a flexibility-oriented structure attuned to exploration innovation (Puranam et al., 2006). By integrating an acquired firm's operations into those of an acquiring firm, the integrated firms can rearrange their existing resources and capabilities and remove redundancy being created (Capron et al., 2001; Datta, 1991). Through the restructuring process, the integrated firms can improve the productivity of their existing resources and capabilities and realise efficiency throughout the integrated entity. Moreover, under structural integration, an acquiring and acquired firm can organise a shared process of search for solutions to existing problems and effectively discover opportunities to refine and modify existing products (Nickerson & Zenger, 2004). Consequently, structural integration can realise

cost saving in production and upgrade existing products across an acquiring and acquired firm. Therefore, structural integration is a structuring method of realising exploitation innovation.

Exploration innovation in cross-border M&As needs organisational structure facilitating flexibility in what an acquiring and an acquired firm does and how they manages their tasks (Tushman & O'Reilly, 1996). When an acquired firm is given great autonomy, the firm can reduce feelings of hostility towards an acquiring firm and get engaged in open and horizontal communication with the acquiring firm (Child et al., 1999; Paruchrui et al., 2006; Stahl et al., 2011). The interaction and communication between the acquiring and acquired firm encourage each other to search for new ideas and insights resided in the other firm and improve their capabilities to comprehend and accurately interpret market uncertainties in a more creative manner (Puranam et al., 2006). Increases in search scope and problem-solving capabilities equip the firms to accelerate their collaboration towards exploration innovation and increase strategic flexibility and adaptability to environmental changes. Put differently, delegation of decision-making is vital for an acquiring and an acquired firm in engaging in exploration innovation. Seeking rich and high-quality ideas and information through a partner firm, an acquiring and acquired firm can come up with optimal solutions to emerging customers' demands (Mu, 2015). Autonomy promotes flexibility and adaptability in an acquiring and acquired firm's search behaviour, the outputs of which come to new ideas and solutions for exploration innovation across the firms (Puranam et al., 2006).

Extending the roles of structural integration and autonomy in leading to exploitation and exploration innovation respectively, this study argues that structural integration and autonomy require exploitation and exploration innovation in cross-border M&As to translate into successful performance outcomes. As argued previously, the choice of post-acquisition structure in itself cannot be the driver of performance, but rather, is the catalyst for innovations that then become the drivers of performance enhancements.

Structural integration through which an acquiring and acquired firm facilitate efficiency-oriented decisions and activities adapted to existing environmental circumstances increases operational efficiency and adds value to existing products. Realising exploitation innovation, the integrated firms can reduce manufacturing costs and constantly update their existing products, which enable the firms to offer customers with lower prices and reinforce their customer bases (Vorhies et al., 2011). Therefore, the integrated acquiring and acquired firm can reap economic returns by the improvement of their existing product-market positions.

Cross-border M&As where an acquiring and an acquired firm work independently foster an attitude towards flexibility and adaptability and stimulate new experiments and the development and commercialisation of new products across the acquiring and acquired firm. The autonomous firms can offer new products beyond their previous experience and acquire new customers. That is, exploration innovation permits an acquiring and acquired firm to develop and introduce new products that satisfy emerging customer needs, which brings about economic benefits (He & Wong, 2004; March, 1991).

Extending the logic behind the performance effects of exploitation and exploration innovation in cross-border M&As, this study argues that exploitation and exploration innovation are the mediatory causes of NPD performance. Building on existing resources and knowledge and existing product domains, exploitation innovation can improve efficiency and reduce errors and mistakes in problem-solving in NPD (Atuahene-Gima & Murray, 2007; O’Cass et al., 2014). Fine-tuning and reducing costly redesign in the production process of NPD, exploitation innovation can reduce the development time of new products (Eng & Ozdemir, 2014). Therefore, exploitation innovation of cross-border M&As can equip an acquiring and acquired firm with efficient NPD, producing quality products that can meet existing customers’ demands and achieving economic benefits in the end (Mu, 2015).

Getting involved in experimentation and the development and commercialisation of new products (i.e., exploration innovation), an acquiring and acquired firm can increase variations and provide new insights into NPD (Atuahene-Gima & Murray, 2007; Mu, 2015). Developing new products with differentiated advantages (Al-Zu’bi & Tsinopoulos, 2012; Atuahene-Gima & Murray, 2007; O’Cass et al., 2014), exploration innovation of cross-border M&As can prosper NPD and produce new and novel products that attract emerging customers and therefore reap successful NPD performance (Mu, 2015).

Notwithstanding the arguments in favour of ambidexterity, a key element for successful ambidexterity is balance (March, 1991). This study views organisational structuring through structural integration or autonomy as different means to approach structuring post-acquisition conduct. As such, this study does not follow the thought that firms can use a balance of structural integration and autonomy to pursue a balance of exploitation and exploration innovation (c.f., Angwin & Meadows, 2015). Rather, structural integration and autonomy are viewed as discrete choices and should result in exploitation innovation and exploration innovation respectively (Puranam et al., 2006). Both of these forms of innovation

are then believed to confer performance benefits to firms. Accordingly, the following are hypothesised:

H1. Exploitation innovation positively mediates the relationships between structural integration and (a) M&A performance and (b) NPD performance.

H2. Exploration innovation positively mediates the relationships between autonomy and (a) M&A performance and (b) NPD performance.

This study argues that the way in which structural integration and autonomy affect M&A outcomes differs. Structural integration facilitates exploitation innovation to bring about performance improvements. In contrast, autonomy brings about exploration innovation to then improve M&A and NPD performance. This argument is constructed on exploitation and exploration innovation mediating the effects of structural integration and autonomy on M&A and NPD performance. Therefore, exploitation innovation and exploration innovation translates into M&A and NPD performance from structural integration and autonomy, respectively.

Following this logic; innovation is viewed as a key to unlocking M&A and NPD performance improvements. Thus, it is important for firms and managers to then understand what post-acquisition mechanisms exist in cross-border M&As for enhancing exploitation and exploration innovation. Based on this suggestion, this study acknowledges the knowledge-based activities and capabilities of an acquiring and acquired firm for post-acquisition innovation (Bauer et al., 2016; Capron, 1999; Puranam et al., 2006). In applying knowledge-based theory then, this study examines knowledge-based constructs as mediating mechanisms of the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation. This will be discussed in the next section.

3.3.2. Knowledge-Based Theory: The Indirect Effect of Knowledge Transfer and Knowledge Sharing within Cross-Border M&As

Knowledge is an organisational resource that helps a firm develop valuable, rare, and imperfectly imitable and imperfectly substitutable and determines a firm's competitive advantage (Barney, 1991; Grant, 1996a). However, from the perspective of knowledge-based theory, keeping knowledge itself does not contribute to firm success, leading the firm to be exposed to the risk of imitation by competitors and discouraging its flexibility and adaptability in dynamic environments (Bierly & Chakrabarti, 1996). In order for a firm to sustain its competitive advantage and maximise the value of its existing knowledge bases, it should

transfer, share, and combine various types of knowledge resources held by different specialists (Grant, 1996a; Kogut & Zander, 1992).

In knowledge-based theory, knowledge creation is an individual activity, and individuals are the major agents of the sharing and combination of their specialised knowledge (Grant, 1996a). However, individuals have limited abilities to learn new knowledge beyond their typical knowledge domains and combine knowledge held by other specialists due to their cognitive limits (Grant, 1996b). Thus, a firm reduces the danger of being locked out of future innovation and gets out of a competency trap by acquiring knowledge developed outside the firm and combining the newly acquired knowledge with its existing knowledge bases (Ranft & Lord, 2002). Put differently, inter-firm collaborations are important to innovation and competitive advantage as they provide opportunities to acquire new knowledge. However, knowledge is sticky; in other words, as knowledge is embedded in cognitive, behavioural, individual, and social contexts (Postrel, 2002; Szulanski, 1996), it is difficult, costly, and uncertain to transfer, share, and combine knowledge across organisational boundaries and borders (Gupta & Govindarajan, 2000; Perez-Nordtvedt et al., 2008). Therefore, a key issue from the perspective of knowledge-based theory is how firms effectively transfer and share their knowledge beyond their environmental constraints.

Within the context of cross-border M&As, a firm merges with or acquires another firm in order to gain access to its knowledge and then seeks to share knowledge with the acquired firm (Morosini et al., 1998). From this point of view, cross-border M&As where an acquiring and acquired firm transfer and share knowledge with each other are an effective mode for searching for new knowledge and creating knowledge-based advantages (Bresman et al., 2010; Karim & Mitchell, 2000). Therefore, the effective utilisation of cross-border M&As resides in knowledge transfer and knowledge sharing.

Knowledge-based theory posits that in dynamic or complex market conditions caused by innovation, knowledge provides a basis upon which a firm can establish longer-term superiority (Grant, 1996a). Not least as knowledge itself becomes the driving force of innovation. For a firm involved in cross-border M&As to act as an institution for knowledge application, two structural choices can be made that influence how knowledge is then used from the M&A: structural integration and autonomy. Following prior established logic and the ideas of the knowledge-based theory, it is likely that structural integration would be increased efficiencies and opportunities to exploit existing strengths for exploitation innovation (Puranam et al., 2006). By separating the operations of an acquired firm from those of an

acquiring firm (i.e., autonomy), their innovation outputs can be exploration innovation (Puranam et al., 2006).

Knowledge-based theory within the context of inter-firm collaboration highlights the role of a firm in acquiring and utilising knowledge across organisational boundaries (Ranft & Lord, 2002). In order to give richer insights into how an acquiring and acquired firm have access to broader knowledge resources of the other firm and how the firms maximise the value of existing knowledge bases of the other firm, this study relies on two knowledge-based constructs: knowledge transfer and knowledge sharing. Knowledge transfer is conceptualised as the redeployment of knowledge resources from/to an acquiring firm to/from an acquired firm (c.f., Capron et al., 1998), grasping the meaning of the movement of knowledge resources (Szulanski, 1996). While knowledge transfer is focused on knowledge resources themselves and the flows of knowledge resources from an acquiring firm to an acquired firm and vice versa, knowledge sharing is constructed incorporating a capability perspective (Grant, 1996a). Knowledge-based theory regards a firm's competitive advantage as residing in its capability to share, combine, and apply knowledge to create value (Grant, 1996a). Extending this premise, this study views an acquiring and acquired firm's capability to share knowledge as an innovation-seeking capability generating knowledge-based advantages. That is, knowledge transfer is focused on knowledge-transfer activities from/to an acquiring to/from an acquired firm, while knowledge sharing is focused on an acquiring and acquired firm's capability to share and combine knowledge.

In the following sections, I explore the role of knowledge-based theory as an explanation for knowledge-based mediation effects that enable exploitation innovation from a decision to structurally integrate and exploration innovation from a decision to confer autonomy.

3.3.2.1. Knowledge Transfer as a Mediator within Cross-Border M&As

Knowledge transfer within a firm allows it to have substantial control over resource use. However, the firm encounters substantial constraints to the internal development of innovation due to its limited abilities to learn externally, or develop, and use resources inherent in its organisational routines (Levinthal & March, 1993). Therefore, the firm turns its attention to inter-firm collaborations and cross-border M&As, which enable an acquiring firm to exercise tight control over knowledge transfer over an acquired firm on the one hand but have access to new knowledge resources that are created outside the firm on the other hand (Karim & Mitchell, 2000; Puranam et al., 2009). Thus, knowledge transfer within cross-border

M&As represents some advantages of both knowledge transfer that occurs under the same sets of organisational boundaries and across organisational boundaries (Ranft & Lord, 2002).

This study argues that an acquiring and acquired firm realise exploitation and exploration innovation through knowledge transfer. Knowledge transfer within cross-border M&As helps an acquiring and acquired firm can reduce redundancy and improve operational efficiency (Capron et al., 2001), which in turn facilitates the productive use of their existing knowledge and resources and the effective identification of existing problems and solutions (Junni et al., 2015; Katila & Ahuja, 2002). Moreover, knowledge transfer can widen search scope, which in turn facilitates experimentations and the introduction and commercialisation of new products (Xu, 2015). However, the effects of knowledge transfer in cross-border M&As can differ depending on the choice of post-acquisition structure between structural integration and autonomy. This study examines the effects of knowledge transfer within cross-border M&As, constructing knowledge-based mediating mechanisms in which structural integration realises exploitation innovation, and autonomy realises exploration innovation, via knowledge transfer.

Under structural integration, an acquiring and acquired firm align their functional activities and operations in an efficient way that can improve the productivity of existing knowledge and resources (Datta, 1991). Transferring the knowledge resources of an acquiring and an acquired firm to the other firm, they can reallocate their existing resources and capabilities to where they can be better used with the knowledge resources transferred and remove redundancy created afterwards (Capron et al., 2001). Restructuring existing resources and capabilities, the acquiring and acquired firm can improve operational efficiency and govern efficient solution search (Capron, 1999; Capron et al., 2001; Nickerson & Zenger, 2004). Therefore, the integrated acquiring and acquired firm can improve their capacity to manufacture products at lower cost and effectively discover existing problems and solutions to them. Offering products at lower price and developing better products with new features or attributes, the integrated firms become more efficient at responding, adjusting, and adapting to current customers' demands. That is, in cross-border M&As seeking exploitation innovation, structural integration requires an acquiring and acquired firm to transfer their knowledge resources to the other firm. In so doing, knowledge transfer from/to an acquiring firm to/from an acquired firm can contribute to cost-saving activities such as economies of scale and efficient problem-solving such as the discovery of deficiencies in existing products for their upgrade. Thus, knowledge transfer from/to an acquiring firm to/from an acquired firm enables exploitation innovation from structural integration.

In contrast to the role of knowledge transfer in translating into exploitation innovation from structural integration, knowledge transfer can play a role as a mediatory cause of exploration innovation within cross-border M&As adopting autonomy. In cross-border M&As where an acquiring and an acquired firm separate their operations from each other (i.e., autonomy), the firms can maintain their own value in culture, routines, and norms and sustain their social context of knowledge creation (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). In such cross-border M&As, knowledge resources that are created from the unique organisational systems of a partner firm can be viewed as new, different, and non-routine from the perspective of an acquiring and an acquired firm (Morosini et al., 1998; Ranft & Lord, 2002). Therefore, the autonomous acquiring and acquired firm can offer each other new ideas and solutions with which experiments are facilitated and from which new products are developed and commercialised. Knowledge transfer within cross-border M&As of autonomy can contribute to seizing future opportunities, facilitating exploration innovation.

Collectively, the structural integration of an acquiring and acquired firm relies on knowledge transfer to generate exploitation innovation, while the autonomy of an acquiring and acquired firm relies on knowledge transfer to generate exploration innovation.

H3. Knowledge transfer from an acquired firm positively mediates the relationships (a) between structural integration and exploitation innovation and (b) between autonomy and exploration innovation.

H4. Knowledge transfer to an acquired firm positively mediates the relationships (a) between structural integration and exploitation innovation and (b) between autonomy and exploration innovation.

3.3.2.2. Knowledge Sharing as a Mediator within Cross-Border M&As

According to knowledge-based theory, knowledge, which is a foundation of a firm's competitive advantage, resides in individuals. Knowledge creation is an individual activity through the sharing and combination of knowledge among individuals that complements their existing knowledge bases (Grant, 1996a). That is, knowledge creation and learning occur at an individual level, and individuals provide their firm with all the knowledge required (Spender, 1994). Therefore, it is not knowledge itself but rather individuals' capability to share knowledge with other individuals in the firm that drives sustainable competitive advantage (Grant, 1996a). Building from this premise, knowledge-based theory seeks to explain why a firm exists and how it organises activities (Kogut & Zander, 1992, 1996). Applying the theoretical foundations to a cross-border M&A context, this study discusses how different

post-acquisition structures affect knowledge sharing, which is defined in this study as the collective ability (and willingness) of an acquiring and acquired firm to share and combine knowledge with each other (Collins & Smith, 2006).

At the most basic level of organisational boundaries is hierarchy (Kogut & Zander, 1992, 1996). Because knowledge is embedded not only in individuals but also in their social relationships in the form of norms, culture, and identity, knowledge creation and development are often viewed as the product of a social context in which individuals communicate with each other (Ranft & Lord, 2002). That is, individuals are motivated to share and combine knowledge with each other, when they feel a sense of belonging (Kogut & Zander, 1996). Moreover, under hierarchy, a firm can develop high-order systems and shared encoding systems through which knowledge can be effectively shared and combined among individuals (Kogut & Zander, 1992). Therefore, a firm emerges as a social community offering high-order organising principles by which individuals share knowledge with each other (Kogut & Zander, 1992, 1996). Therefore, under hierarchy, a firm can develop firm-specific shared identity and a shared organisational system that support communication and coordination among individuals, and therefore develops their ability to share knowledge.

Infusing the virtues of hierarchy into a cross-border M&A context, structural integration, which brings two firms to be combined to run as a single firm, offers insights into the conditions under which individuals effectively share knowledge with each other and across firms. As an acquiring and acquired firm combine their functional activities within common organisational boundaries, the firms bring to communication to decide how to allocate tasks and how to combine the results of tasks (Puranam et al., 2009). As the firms work closely, they establish mutual understanding of what is important to a new entity for effective collaboration and a strong sense of belonging motivating them to share their specialised knowledge (Larsson & Finkelstein, 1999; Puranam & Srikanth, 2007). Moreover, under structural integration, an acquiring and acquired firm build a shared organisational system and become aware of the existence and location of the knowledge bases of the other firm (Dyer & Singh, 1998). Thus, the integrated firms can appreciate the potential value of existing knowledge of the other firm and get motivated to acquire it (Cohen & Levinthal, 1990; Vaara et al., 2012). Therefore, cross-border M&As of integrating an acquired firm into an acquiring firm coordinate their activities in a way that fosters knowledge sharing between them.

Though the most obvious advantage of hierarchy is effective knowledge sharing, another group of knowledge-based theory argues that hierarchy rather limits knowledge

sharing because of the exercise of authority on lower-level employees, the centralisation of decision-making, and the vertical imposition of bureaucratic processes (Fransson et al., 2011; Grant, 1996a; Tsai, 2002). Knowledge sharing is not always facilitated within the hierarchical organisational structure (Fransson et al., 2011), in which a high authority directs lower-level employees to necessary tasks and to behave in its expected way (Conner & Prahalad, 1996).

Within a cross-border M&A context, in which an acquiring firm believes itself its higher-status position while an acquired firm see itself in its lower-status position, the acquired firm is likely to take a hostile stance towards the collaboration with the acquiring firm (Hambrick & Cannella, 1993). This hostile stance can be more distinguishable within cross-border M&As where an acquiring firm removes the autonomy of an acquired firm (Hambrick & Cannella, 1993). Within cross-border M&As of an acquired firm integrated into an acquiring firm, the acquiring firm typically imposes its standard operating systems, routines, and culture on the acquired firm and forces it to alter the way it has operated (Birkinshaw et al., 2000). Under such post-acquisition structure, the acquired firm's relative standing is deteriorated (Hambrick & Cannella, 1993; Lubatkin et al., 1999). The acquired firm's diminished relative standing hinders the acquiring firm from gaining support from acquired employees and therefore limits knowledge sharing with the acquiring firm. Moreover, in many cases, the acquired executives and employees leave their firm following an M&A completion (Lubatkin et al., 1999). The loss of knowledge impairs the acquired firm's motivation about knowledge sharing in collaboration with the acquiring firm and undermines the acquired firm's innovation capabilities at the same time (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). Thus, for an acquiring firm seeking to explore an acquired firm's innovation capabilities and outcomes, its primary task is to increase the acquired firm's relative standing. By granting autonomy to an acquired firm, an acquiring firm can keep acquired employees productive, encouraging them to share knowledge with the acquiring firm and to consistently innovate (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). Autonomy can reduce disruption in an acquired firm's innovation capabilities, enabling an acquiring and an acquired firm to innovate on their own way and offer new and creative solutions to each other (Ranft & Lord, 2002). They can see each other attractive as a source of breakthrough innovation and get willing to share knowledge with each other (Sarala & Vaara, 2010).

The central tenet of the existence of the firm within knowledge-based theory is knowledge development and creation through knowledge sharing. Extending the knowledge-based explanations about knowledge sharing within cross-border M&As adopting structural integration or autonomy, this study argues that post-acquisition innovation differs depending

on the choice of post-acquisition structure between structural integration and autonomy. that is, knowledge sharing mediates the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

Exploitation innovation can be realised when those who in charge of the relevant activities build a shared identity and have a good understanding of what knowledge is needed and how it is used in solving existing problems (Tang et al., 2015; Xu, 2015). Structural integration will likely be appropriate post-acquisition structure meeting the requirements for exploitation innovation (Puranam et al., 2006). As an acquiring and acquired firm align their activities with each other, they fulfil tasks together, encouraging the acquiring and acquired firm to build a sense of collective responsibility for tasks and a shared identity as a result (Larsson & Finkelstein, 1999; Puranam & Srikanth, 2007). The integrated acquiring and acquired firm with a shared identity may get willing to share knowledge with each other. Moreover, as an acquiring and acquired firm work together under common organisational systems, they get to know who knows what and where critical knowledge resides in the firm (Dyer & Singh, 1998; Junni et al., 2015). They can improve an ability to identify the potential value of the knowledge of a partner firm and the potential contribution and combination of existing knowledge of the partner firm (Cohen & Levinthal, 1990), which enable the firms to share knowledge with each other (Junni et al., 2015).

As an integrated acquiring and acquired firm share existing knowledge with each other, the firms can bring their advanced knowledge for each other and contribute to knowledge depth of each other (Prabhu et al., 2005). For example, sharing and combining an acquiring firm's advanced R&D knowledge and an acquired firm's manufacturing and marketing knowledge, the firms can come up with high-quality ideas and information that can be considered a solution to existing problems (Xu, 2015). With deeper knowledge on existing processes and products and improvements in problem-solving performance, the acquiring and acquired firm can effectively recognise downstream problems such as underused manufacturing and product design (Brown & Eisenhardt, 1995). Thus, knowledge sharing within the structural integration of an acquiring and acquired firm can contribute to the achievement of economies of scale and incremental improvements in existing products.

Exploration innovation, which is involved with high levels of task complexity deviating a firm from its existing knowledge and competence bases, needs organisational structure that enables a great amount of knowledge stocks and different types of knowledge to be shared (Tang et al., 2015). As knowledge is embedded in a particular social context in the form of

culture, routines, and norms, the knowledge created from the unique social context can be a breakthrough to other firms (Ranft & Lord, 2002). In cross-border M&As pursuing exploration innovation, an acquiring firm is willing to give autonomy to an acquired firm for fear that autonomy removal should decrease the acquired firm's relative standing and discourage the acquired executives and employees from collaborating with the acquiring firm (Hambrick & Cannella, 1993; Lubatkin et al., 1999; Very et al., 1997). Autonomy respects the way that an acquired firm has operated on its own way and avoids an acquiring firm's intervention in the acquired firm's social context of knowledge creation (Kapoor & Lim, 2007). Therefore, autonomy contributes to knowledge sharing between an acquiring and acquired firm and enables them to offer each other new knowledge and insights that promote experiments and new product development and commercialisation across the firms. That is, autonomy promotes an environment where an acquiring and acquired firm share knowledge with each other and accelerate exploration innovation across the firms (Puranam et al., 2006). Therefore, this study hypothesises that structural integration promotes exploitation innovation, and autonomy promotes exploration innovation, via knowledge sharing.

H5. Knowledge sharing positively mediates the relationship between structural integration and exploitation innovation.

H6. Knowledge sharing positively mediates the relationship between autonomy and exploration innovation.

3.4. Conclusion of Hypotheses Development Chapter

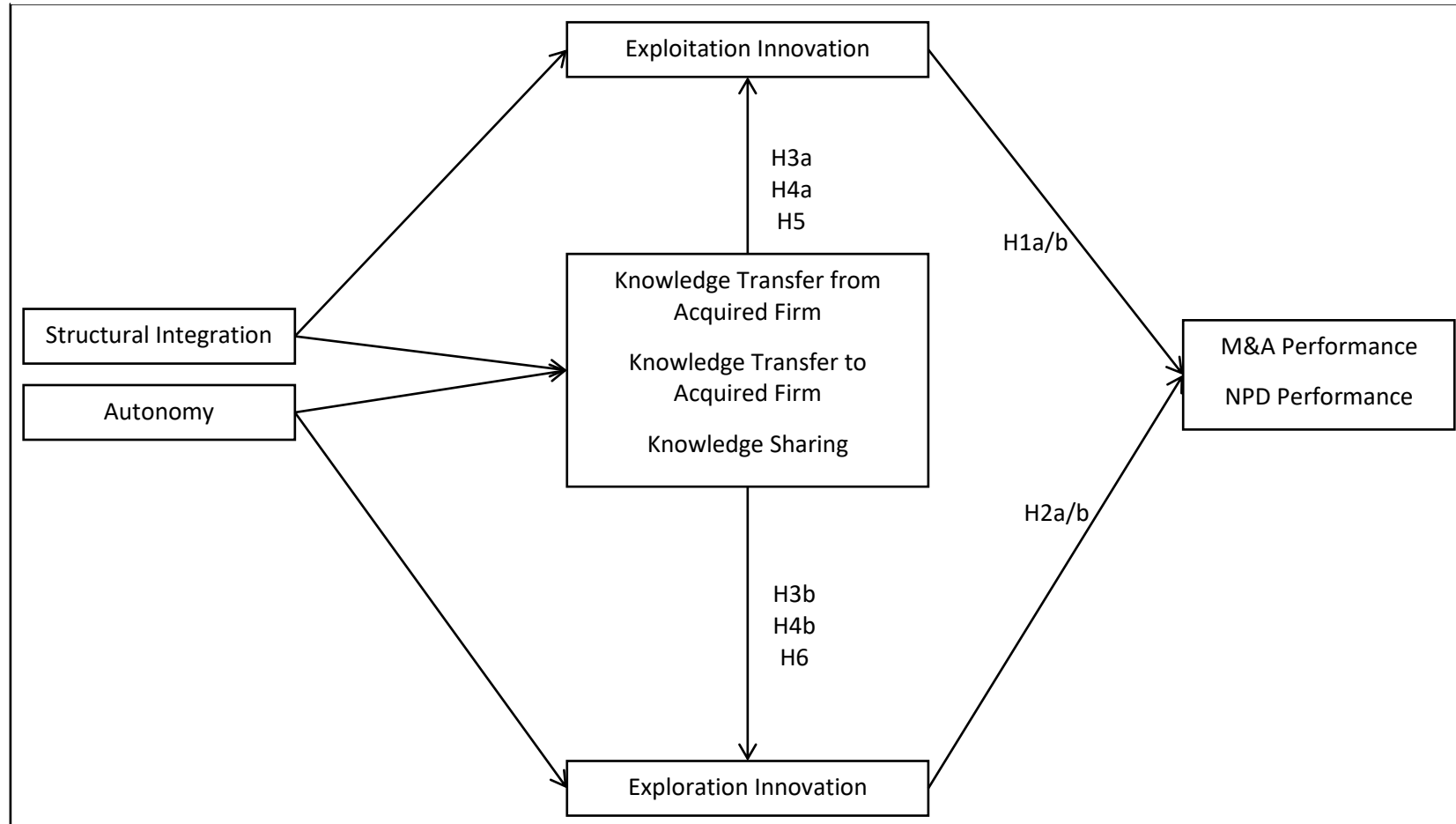
This study constructs a model of how post-acquisition structures affect post-acquisition innovation and then M&A and NPD performance within knowledge-based theory. Drawing from the perspectives of exploitation and exploration innovation, this study argues that structural integration is an efficiency-oriented structure attuned to exploitation innovation, whereas autonomy is a flexibility-oriented structure attuned to exploration innovation. By integrating the functional operations of an acquired firm into those of an acquiring firm, they can generate cost-saving effects and produce incremental improvements in existing products. By separating the functional operations of an acquired firm from those of an acquiring firm (i.e., autonomy), they can offer new ideas and solutions that facilitate experiments and develop and commercialise new products. As a result of the realisation of exploitation innovation or exploration innovation, the merging firms can gain superior M&A and NPD performance.

In addition, this study further explains the knowledge-based constructs operationalised around the relationships between post-acquisition structures and exploitation and exploration

innovation. From knowledge-based theory, innovation takes place when existing knowledge is transferred, shared, and combined (Grant, 1996a). From this point of view, cross-border M&As, which enable an acquiring and acquired firm to have immediate access to the existing knowledge bases of the other firm and acquire them, are an effective means of searching for knowledge that can contribute to existing knowledge bases and future innovation. Transferring the knowledge resources of an acquiring and acquired firm to the other firm and sharing knowledge with each other, the firms can maximise knowledge-based advantages and develop innovation. Within cross-border M&As adopting structural integration, knowledge transfer from/to an acquiring firm to/from an acquired firm contributes to operational efficiency and the efficient organisation of problem-solving and search and therefore brings about exploitation innovation. Moreover, within cross-border M&As adopting structural integration, knowledge sharing between an acquiring and acquired firm contributes to knowledge depth that helps the firms to effectively address existing problems that can upgrade existing products. In contrast, within cross-border M&As adopting autonomy, knowledge transfer and knowledge sharing offer an acquiring and acquired firm new ideas and solutions that facilitate experimentation and the development and commercialisation of new products. Therefore, the effective utilisation of cross-border M&As resides in knowledge transfer and knowledge sharing. Depending on the choice of post-acquisition structure between structural integration and autonomy, the merging firms increase the potential for exploitation innovation or exploration innovation. Therefore, knowledge transfer and knowledge sharing are constructed as mediating variables linking between structural integration and exploitation innovation and between autonomy and exploration innovation.

Collectively, this study constructs an integrative framework of a post-acquisition mechanism of M&A and NPD performance within two mediating mechanisms, (1) one of which builds from the mediators of exploitation and exploration innovation in the relationships between structural integration and autonomy and M&A and NPD performance, and (2) the other of which builds from the knowledge-based mediators in the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation. The hypothesised model for this study is outlined in Figure 3.1.

Figure 3. 1 Hypothesised Model



Chapter 4: Research Methodology

4. Methodology

This chapter provides the research methodology employed in this study. Detail is given on how the research method was structured and designed, how and from whom data was collected, and what statistical analyses were employed, discussing the justification for the development of the research methodology from a philosophical standpoint.

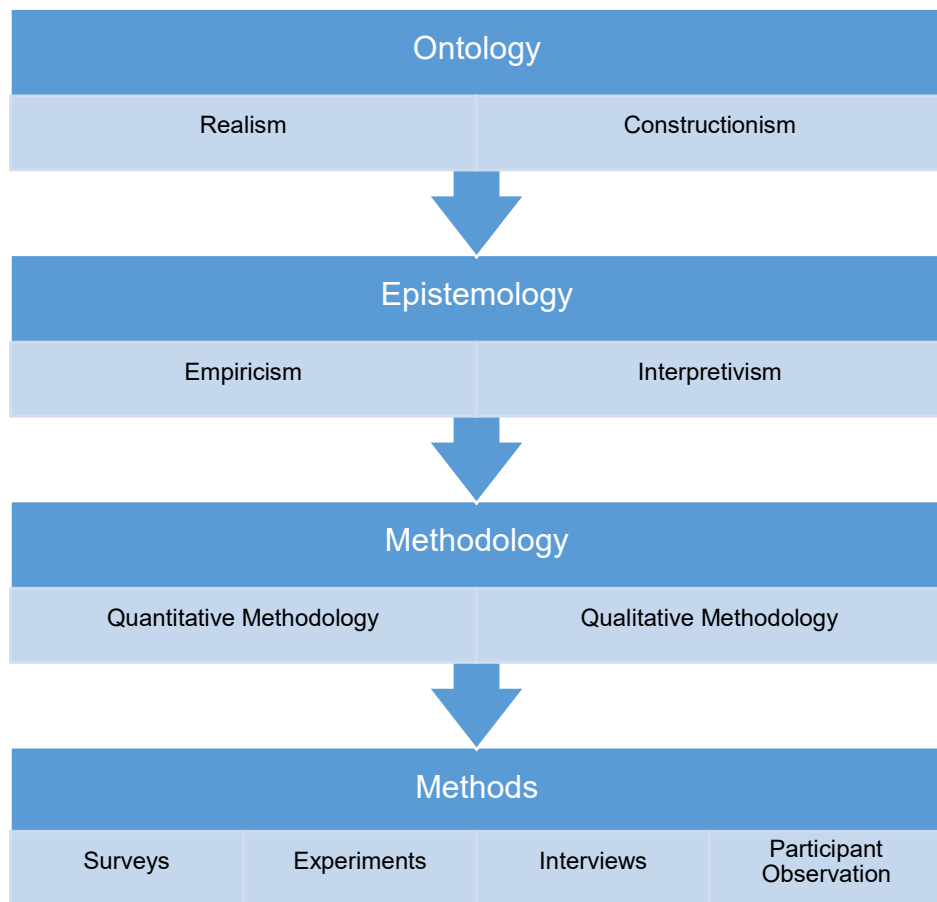
4.1. Philosophy of Science

Before deciding on research methodology and subsequent methods for the investigation of research questions, it is necessary to start with discussion of philosophical assumptions underpinning the selection of the research methodology and method used in this study and thereby justify their application. In this section, I explain different philosophical assumptions detailing their principles and characteristics, concluding with the position adopted and justification for the research methodology and research method.

4.1.1. Ontology, Epistemology, Methodology, and Methods

The structure and process of social research are organised by ontology, epistemology, methodology, and methods. The former two determine the latter two, as seen in Figure 4.1. I now provide detailed explanations of what lies behind the choice of research methodology and research method for this study, beginning with discussion on ontology and epistemology.

Figure 4. 1 A General Illustration of the Philosophical Foundations of Research



4.1.1.1. Ontology

Ontology concerns questions of what social research is supposed to study at two extreme positions of realism and constructivism (May, 2001; Neuman, 2011; Sarantakos, 2005). Under realism, where the social world exists independently of people and their interpretations, realists believe only what they see (or can be seen) and what can be determined as objective knowledge (Neuman, 2011; Sarantakos, 2005). Thus, the theory and the evidence that the realists adhere to can challenge widely shared beliefs among people and society (May, 2001). In contrast, under constructionism, where the social world exists through a lens of people’s subjective interpretation (Neuman, 2011), constructionists believe what people understand based on their physical-social experience and focus on the meaning and interpretations that people give to their environment (May, 2001; Meuman, 2011).

4.1.1.2. Epistemology

Epistemology denotes general assumptions about a study of reality by dealing with the issues of how people know the world around them, what should be considered acceptable

knowledge, and where knowledge is to be acquired (Neuman, 2011). Epistemological assumptions are grounded in two extreme positions being used to denote or reflect realism and constructionism ontological assumptions.

In the realism position, pre-existing ideas about reality that are verified by experience and empirical data constitute knowledge, whereas the ideas that are not observed should be defined as myth or illusion. This is referred to as empiricism (Bryman, 2008; Neuman, 2011). In other words, empiricism suggests that knowledge is subject to ideas that are measurable and empirically acquired by means of experiments, surveys, and statistical analysis (Bryman, 2008; Neuman, 2011; Sarantakos, 2005). In contrast, in the constructionism position, it is not the making of observations itself but rather people's interpretation and subjective views that constitute knowledge about reality. This is referred to as interpretivism (Bryman, 2008; Neuman, 2011). According to interpretivists, reality results from a constant process of people's actions and interpretation at certain points in time and location so that the reality perceived by people is different from individual to individual. Therein, no absolute truth exists, strictly speaking (Neuman, 2011). Therefore, the best knowledge about reality from the interpretivists' perspective resides in people's inner mental states (May, 2001).

4.1.1.3. Research Methodology

Ontological assumptions about the nature of reality and epistemological assumptions about what constitutes knowledge of reality therefore consist of two polar extremes: realism ontology and empiricism epistemological assumptions on the one hand and constructionism ontology and interpretivism epistemological assumptions on the other hand. Based on these two extremes, research methodology and a selection between quantitative and qualitative methods (typically, but not always) become necessary as a tool of finding out reality and acquiring knowledge therein.

4.1.1.3.1. Quantitative Methodology and its Associated Methods

When it comes to realism and empiricism assumptions, where reality is viewed as objective and independent of human consciousness and knowledge is acquired through measurement, quantitative methodology and methods are chosen (Sarantakos, 2005). Quantitative methodology is normally understood as approaches testing the causal relationship between concepts rooted in hypotheses and theories, imitating methods and style of natural scientists (Bryman, 1988). In so doing, quantitative methodology aims to verify or reject the causal relationship and creates generalisable knowledge about reality by transforming abstract concepts in social science into operational and measurable variables

(Bryman, 1988; Porta & Keating, 2008). Consequently, quantitative methodology tackles ambiguity about the cause-effect relationship between variables and applies findings to a wider population of which a sample is representative to give rise to generalisable findings from a particular investigation (Bryman, 1988; Porta & Keating, 2008). The most commonly employed quantitative methods in social research are surveys and experiments.

Surveys are designed to provide statistical evidence of a particular social phenomenon by collecting a large volume of data on a representative sample from a given population and testing theories wherein certain sets of variables are manually appointed as prospective causes of outcome variables (Bryman, 1988; Henn et al., 2006). Accordingly, surveys are capable of evaluating causal inference and making descriptive and explanatory generalisation about a wider population beyond a sample (Bryman, 1988). In spite of the advantages of the survey method providing empirical and statistical evidence and developing objective knowledge, it might expose a study to problems of verifying the generalisation of findings. Survey researchers tend to collect a sample from particular regions or cities on the basis of convenience or strategic considerations and justify the generalisation of their findings to the population from which these more localised populations are derived (Bryman, 1988). In addition, an incorrectly specified sample creates sampling error that can create misleading results (Murphy, 2002). Thus, it is possible that those studies whose test site is focused on certain regions or cities reflect local influences of the sample so that their research findings might be exposed to bias in data collection and lack generalisation beyond the confines of the research location (Bryman, 1988).

Experiments are where researchers manipulate an experimental stimulus over an experimental group that is exposed to different types or levels of the stimulus compared to a control group that is allowed autonomy, while the two groups are identical in all other aspects (Bryman, 1988, 2008). These are widely used in social psychology. This comparison between the experimental and control groups is designed to establish the relationship between cause as an independent variable and effect as a dependent variable and to investigate the influence of the independent variable between the groups on variations in a level of the dependent variable (Bryman, 2008; Henn et al., 2006). Nevertheless, in the case of field experiments, which are carried out in a natural setting such as in classrooms and firms, researchers have little control over the situation and are unable to manipulate experimental and control groups sufficiently in many cases. When there is insufficient control over stability and manipulation,

experiments will lack the power to accurately detect the causal relationship that they seek to explain (Bryman, 2008; Henn et al., 2006).

Beyond the issues of generalisation in surveys, experiments are also deeply concerned about their ability to generalise findings to an intended population beyond the experiments themselves. This methodological limitation is largely caused by difficulty in assuring the representativeness of experimental subjects and by experiments' 'laboratory', over which researchers must maintain tight control (Bryman, 1988; Henn et al., 2006). First, many experiments tend to be conducted on students, volunteers, and those who are given incentives to participate, who are claimed to be different from others (Bryman, 1988, 2008). Thus, it is likely that the experiment method will encounter doubt that its experimental subjects are precisely (or at least sufficiently) representative of people (or the population) as a whole. Second, in the case of the laboratory experiments, the artificial environments of the laboratories may be different from the real world contexts they seek to reflect (especially in terms of the extent to which all meaningful factors can be controlled) so that experimental subjects might react to an experimental stimulus differently (Bryman, 1988). For example, experiment subjects might act in a particular way deliberately in a situation where they are aware they are being observed (Henn et al., 2006). Alternatively, in the case of a natural setting by means of field experiments, their findings may be more generalisable beyond their specific research contexts (Bryman, 2008; Henn et al., 2006).

4.1.1.3.2. Qualitative Methodology and its Associated Methods

Based on constructionism and interpretivist assumptions, reality is perceived as the result of the construction of meanings that emerge out of people's understanding and interpretation of their social reality, and knowledge is then acquired from their experience and interpretation therein (Sarantakos, 2005). Drawing from the constructionism and interpretivist assumptions, qualitative methodology and methods are considered appropriate. Qualitative methodology reflects interpretative approaches that seek to make reality visible by describing and analysing the culture and behaviour of people and their groups from their point of view (Bryman, 1988; Porta & Keating, 2008). Put differently, qualitative methodology is carried out to appreciate how people experience and perceive reality around them and to understand meanings behind their behaviour based on the assumptions that reality resides in the minds of the people who construct it (Henn et al., 2006). As a consequence, for those researchers who wish to examine understanding and interpretation of what people experience as reality,

qualitative methods such as interviews and participant observations are preferable (Henn et al., 2006; Porta & Keating, 2008).

Interviews, under which research participants talk in detail about the subject of interest and help researchers develop better understanding of the subject from the interviewees' point of view, lie on a continuum ranging from structured interviews to unstructured ones. At one end of the continuum, interviews are structured. Each interviewee is asked the same questions in the same order in a pre-structured questionnaire (for example) for researchers to compare between responses (May, 2001). While structured interviews focus on standardisation and efficiency compared to other types of interviews, little room is left for variation and flexibility in responses. This is viewed as their chief weaknesses (May, 2001; Punch, 2014). At the other end of the continuum, interviews are unstructured (or semi-structured in-between), where interviewees are free to talk about an issue wherever or however they wish in response to a relatively open set of questions. A researcher uses flexible questioning styles to facilitate this (Henn et al., 2006). This open-ended character offers researchers opportunities to explore people's interpretation and meanings of events and situations and uncover issues and concerns that researchers might not have previously considered (Punch, 2014). Consequently, unstructured interviews bear strengths in terms of flexibility and qualitative depth.

Other forms of qualitative methods do exist such as participation observations in which researchers observe and record the behaviour of those who are being studied in their natural environments (Sarantakos, 2005). Under the observed's acceptance of their participation, the participant observation method should be carried out as unobtrusively as possible. The observed should typically be aware as little as possible that they are being examined and observed (Henn et al., 2006; Sarantakos, 2005). Participant observation relies on the relationship between the observer and the observed in that respect. Whereas interviews put an emphasis on neutrality in an interviewer's role during the course of an interview (May, 2001), participant observation values natural closeness and mutual trust between the observer and the observed because the former actually joins the latter's daily life and is allowed to talk freely with the latter whenever and wherever appropriate (Punch, 2014). On the other hand, this deep involvement of the observer into the observed can introduce biases that may jeopardise the validity and objectivity of the findings (Henn et al., 2006) (assuming these properties are vital to protect; although in some cases, that objectivity may be overruled by a desire to understand the subjectivity at hand, for example).

4.1.1.3.3. Summary of Research Methodology and Methods

Research methodology and research method are determined depending on ontological and epistemological assumptions about the perception of reality and the methods of knowledge acquisition. From the perspective of realists and empiricists, social reality has a natural order, and knowledge is acquired by observing the natural order (Neuman, 2011). Based on these assumptions, realists and empiricists pursue the application of natural science models to a study of social science and seek for quantitative methodology such as surveys and experiments that detach researchers from the process of data collection and analysis and produce objective knowledge (Neuman, 2011; Sarantakos, 2005). In contrast, constructionists and interpretivists argue that social reality is constructed out of people's understanding and interpretation of what they experience in the social world. In other words, from the perspective of constructionists and interpretivists, social reality is subjective and dependent on individuals' everyday concepts and meanings. Knowledge is the results of the re-constructs and re-description of what people have in their mind. Therefore, constructionists and interpretivists opt for qualitative methodology and method that enable research participants to provide an account of their world in their own language.

4.1.1.4. Summary of Philosophical Assumptions

The philosophical foundations of social science constitute ontological, epistemological, and methodological assumptions explaining how reality is perceived and instructing researchers how to inquire into that reality, and in turn reach a decision on research methodology and method (Punch, 2014; Sarantakos, 2005).

Within ontology, two basic positions are realism, within which social world is viewed as pre-existing and independent of human consciousness and experience, and constructionism, within which social world is constructed by people's subjective interpretation of their experience. These two conflicting ontological assumptions guide a way of acquiring knowledge. Empiricism, which is accompanied with realism, believes in objective knowledge and accumulates it through experience and empirical evidence (Bryman, 2008). In contrast, interpretivism, which is drawn from constructionism, understands social phenomena by constructing people's subjective meaning (Sarantakos, 2005). These different sets of the ontological and epistemological assumptions inform how research is to be structured and what kind of methodology is to be employed (Sarantakos, 2005). That is, a way in which ontology and epistemology are reflected into methodology determines the choice of research method for data collection and data analysis. Therefore, research method is the product of a process of

consideration of the assumptions about ontology, epistemology, and research methodology (Henn et al., 2006). I now move to discuss the three most typical paradigms in the next section.

4.1.2. Philosophical Paradigms

Borrowing from Filstead's (1979) definition of paradigms, they are "a set of interrelated assumptions about the social world which provides a philosophical and conceptual framework for the organi[s]e study of that world" (p. 34). The paradigms drawing from the interrelated assumptions about ontology, epistemology, and methodology guide researchers towards research design and the selection of methods and participants.

4.1.2.1. Positivism VS. Interpretivism VS. Critical Theory

One of the traditional approaches to studying social reality is positivism. The origin of positivism can be traced back to a work of *The Course of Positive Philosophy* by August Comte, a French social philosopher, during the period between 1830 and 1842 (Cacioppo et al., 2004; Henn et al., 2006; Neuman, 2011; Smith, 1983). Comte criticises the methodology adopted by social scientists of his time for searching for God and spirituality and employing metaphysical principles and philosophical truths in explaining social problems and understanding human behaviour. Alternatively, he argues for the explanations of social phenomena based on positive truths that come from the use of scientific methods independently of human consciousness and from the collection of facts and empirical data (Henn et al., 2006; Neuman, 2011; Smith, 1983). A new methodological thinking of the time introduced by Comte flourishes in the name of positivism in Europe and gains strength in the USA in the twentieth centuries with many research institutions including universities joining these new methodological trends towards positivism (Henn et al., 2006; Neuman, 2011).

Positivists believe that social science can probe social phenomena in the same way as natural science (Roth & Mehta, 2002; Sarantakos, 2005). Accordingly, positivists follow the perception of reality and the methods of knowledge acquisition adopted by natural scientists, where they explain and predict natural phenomena by their general causal laws - for example Isaac Newton's discovery of gravity from its effect on an apple falling to the ground - (Henn et al., 2006). From the standpoint of positivists, producing a set of true, precise, and unchangeable laws of the social phenomena by means of inferential statistics, while researchers are separated from the process of data collection and analysis, is a central tenet of the positivism paradigm (May, 2001; Ponterotto, 2005; Roth & Mehta, 2002; Sarantakos, 2005). With positivists' belief in realism as the nature of reality and empiricism as the nature of knowledge, they adopt quantitative methodology such as surveys and experiments that enable

researchers to evaluate hypotheses and generalise their findings beyond the data and separate themselves from data collection and analysis.

Challenging the logic behind the positivism paradigm, another school of thought including Kant (1881/1966) and Dilthey (1984/1977) pay attention to the interpretation of social phenomena from the perspective of the people that researchers are studying (Ponterotto, 2005). This is referred to as interpretivism. Based on the assumptions that social reality is complex, changeable, and uncontrollable, interpretivists argue that human beings do not respond to such reality in the same way but take different actions to external factors (Henn et al., 2006). Thus, reality is constructed by people's experience and interpretations through their daily social interaction. The knowledge produced is not universal laws and objective facts but subjective and multiple meanings of a phenomenon in people's minds (Gibbs, 2001; Henn et al., 2006; Neuman, 2011; Ponterotto, 2005). In other words, reality from the perspective of interpretivists is not where everyone experiences the world in a singular, fixed, and uniform way but where reality is constructed through people's culturally- and historically- embedded interpretation and their personal experience (Neuman, 2011; Sarantakos, 2005; Smith, 1983). Hence, what constitutes knowledge from the interpretivists' perspective is situational and context specific and the outcomes of a search for hidden meanings (Gibbs, 2001; Ponterotto, 2005).

Interpretivism argues that the hidden and subjective meanings of social phenomena are brought to the surface through a dialogue between researchers and participants, which is a central tenet of the use of qualitative methods within the interpretivism paradigm (Henn et al., 2006; Ponterotto, 2005).

While positivism and interpretivism represent two opposite ends of the continuum of the philosophical paradigms, critical theory emerges as the third stream of philosophy of science and research paradigms. It criticises positivism for not dealing with the meanings of real people and interpretivism for not taking account of a deeper layer of reality that consists of contexts in which human activity is constructed (Neuman, 2011; Ponterotto, 2005).

At the heart of this third school of philosophical thought in social science resides an idea to challenge the status quo and uncover reality shaped by social structures and mechanisms that promote differences among the experiences of people (Henn et al., 2006; Ponterotto, 2005). In line with the constructivism ontology of interpretivism, critical theorists view reality as being constructed out of what people see and experience in the world within social and historical contexts (Ponterotto, 2005). However, taking a step further than interpretivism,

critical theory understands the complexity of reality (for example within power relations) and seeks to produce knowledge that challenges unequal distribution events or experiences (Kincheloe & McLaren, 1994; May, 2001; Ponterotto, 2005). As such, an objective reality may exist even if people’s experiences of it are different. Critical theory typically relies on dialogic interaction between researchers and participants (Ponterotto, 2005) but values the merits of basing analysis on both quantitative methods (Meuleman et al., 2009) and qualitative ones (Knopp & Brown, 2003). Accordingly, critical theory values methodological pluralism or ideas embracing all kinds of research methods from quantitative methodology to qualitative methodology (Sarantakos, 2005). The distinctions between positivism, interpretivism, and critical theory are summarised in Table 4.1 in terms of the nature of reality and knowledge and the methodology and method of knowledge acquisition.

Table 4. 1 Summary of Philosophical Paradigms

Paradigm	Positivism	Interpretivism	Critical Theory
Assumptions			
Ontology	Realism	Constructionism	Constructionism
Epistemology	Empiricism	Interpretivism	Empowerment
Methodology	Quantitative Methodology	Qualitative Methodology	Quantitative and Qualitative Methodology
Methods	Surveys, Experiments, etc.	Interviews, Participant Observations etc.	Quantitative and Qualitative Methods

The philosophical assumptions and paradigm employed in this study are explained in the following sections.

4.1.3. This Study’s Philosophy of Science

Above I have discussed the theoretical construction of social research in which the philosophy of science parameters of ontology, epistemology, and methodology is debated over three different research paradigms of positivism, interpretivism, and critical theory. In this part, I justify my position in positivism along with the choice of a survey quantitative method for this study.

I chose to structure this study within the positivism paradigm in which the realist ontology, the empiricism epistemology, and the quantitative methodology are embedded for the following assumptions and characteristics of this study. This study aims to study post-acquisition and answer the question of how the post-acquisition structures of structural

integration and autonomy affect post-acquisition innovation and then M&A and NPD performance within knowledge-based theory. My views on conceptual roots underpinning the quest for knowledge needed to address the research aim were based on the following assumptions: (1) The reality of cross-border M&As was fixed, real, and objective; (2) therefore, it could be approximated through empirical observations and needed the research methodology and research method that reduced the influence of researchers as much as possible (Roth & Mehta, 2002); (3) the process in which an acquiring and acquired firm engage in post-acquisition conduct and then affect M&A success could be contextualised within a theory and verified through theory testing (Ponterotto, 2005); (4) inferential statistics could verify a theory by evaluating hypotheses about cross-border M&A phenomena; and (5) the empirical results produced could be generalised to a larger population (Ponterotto, 2005).

Based on the aforementioned assumptions, I selected the positivism paradigm and organised this study in accordance with its guiding principles. First, acknowledging the existence of objective reality and knowledge of the world of cross-border M&As, I subscribed to the philosophy of realism and empiricism in describing the world as it really was. Therefore, I sought precise and rigorous measures and objective research that could explain what exactly existed in the cross-border M&A world with few effects of human perceptions and measurement. That is, I employed quantitative methodology and conducted statistical analysis on large sets of data while separating myself from what was observed. Second, I employed a survey to test hypotheses in my theoretical and conceptual framework and to evaluate a framework of a post-acquisition mechanism in which (1) structural integration and autonomy positively affect M&A and NPD performance through the mediators of exploitation and exploration innovation and (2) structural integration realises exploitation innovation, and autonomy realises exploration innovation, through the mediators of knowledge transfer and knowledge sharing. Finally, standing on the positivism paradigm, this study sought to detect and measure theoretical statements about the cross-border M&A world and generalise findings to a wider population of which the sample was designed to be representative. The sample data was collected from UK acquiring firms that had completed their most recent cross-border M&As from January 2012 and July 2015. By testing my theory and its hypotheses on the sample data, statistical results could be generalisable beyond the confine of this research location and to global cross-border M&As. Thus, I argue that the positivism paradigm was suitable for this study.

In conclusion, researchers must have conceptual roots underpinning the quest for knowledge. Their research should be structured within certain research paradigm depending

on their views on the nature of reality and knowledge and the process of acquiring the knowledge, each of which is understood as ontology, epistemology, and methodology, respectively.

I regarded myself as positivists because of my belief in objective and singular reality of the phenomena about cross-border M&As and in empirical verification of my pre-existing knowledge contextualised within a hypothesised model. Therefore, I decided to employ quantitative methodology and a survey method that were brought to identify hypotheses about post-acquisition structures (i.e., structural integration and autonomy), post-acquisition conduct (i.e., knowledge transfer, knowledge sharing, and post-acquisition innovation), and M&A outcomes (i.e., M&A performance and NPD performance) and quantify a large volume of data on a representative sample from the population of UK acquiring firms to test hypotheses. How the survey method was constructed and employed will now be discussed.

4.2. Survey Method Design

Herein, I discuss the characteristics of a survey method in this study regarding its forms, research design, and sources. In so doing, I seek to assure that the survey method gives rise to evidence that answers the research questions of this study as clearly as possible.

4.2.1. Forms of Survey Method

The survey for this study was designed in the form of a self-completion survey in which respondents complete a survey while they are being left alone (Bryman, 2008; Oppenheim, 1992). I argue that this form of survey is more appropriate over a group-administered survey in which a group of respondents complete a survey while two or more people administer the course of the survey (Bryman, 2008; Oppenheim, 1992). The choice of a self-completion survey was because the intended respondents to the survey included senior-level managers of UK acquiring firms who would likely be too busy to turn up at certain points of time and location or to schedule meetings with in a realistic timeframe at a reasonable cost to the researcher. Even if they would be happy to participate in a group-form of survey, it would be too costly to cover their expense such as transportation or accommodation as they were geographically located across the UK. In this sense, a self-completion survey was more likely to elicit great support and response rate. This method also ensured that I was distant and detached from the data collection, as required by my chosen philosophical position.

A self-completion survey varies in the form it can take. The most typical and widely used survey forms are a postal survey and an online survey. A postal survey is sent through a postal

system to respondents who then return a survey completed by post. In contrast, an online survey is sent as an email linked to an electronic version of a survey to potential respondents who then complete the survey at their convenience (Bryman, 2008; David & Sutton, 2011). Among these two forms of survey, I selected an online survey for the following reasons. First, although a postal survey is often considered as cheap forms of quantitative methods, this is rarely the case when executed properly. An online survey can be more cost effective than a postal one. Whereas a postal survey incurs the cost of envelopes, return postage, paper, and so forth, the only costs that an online survey incurs are start-up costs associated with the software needed to produce survey questions, which are relatively cheaper than the total expense of implementing a postal survey. In this sense, an online survey is a cost-saving method but also more cost-effective in cost-response terms. Second, an online survey allows fast return of responses (Bryman, 2008). Researchers are able to receive responses from an online survey as soon as it is completed and monitor completion and response rates with greater accuracy. In the case of a postal survey, it takes a longer time for researchers to receive it as it should be mailed back. This is why an online survey is described as time-effective and efficient. Third, survey development software such as Qualtrics helps researchers to design a survey and manage the responses returned with little technical expertise. For example, Qualtrics enables researchers to set up a wide variety of stylistic formats for presenting and developing survey questions, send many emails at once, and download survey responses into a database that can be easily uploaded into data analysis packages such as SPSS. On the other hand, in the case of a postal survey, researchers manually create survey questions, taking face validity into great account, and manually manage survey responses (introducing a danger of human error, however little), which require greater amounts of time and technical expertise.

In spite of the advantages of an online survey, it is typical that it suffers from low response rates, which can impair its usefulness as a survey method. It is widely believed that an online survey is likely to achieve lower response rate than a postal survey (Nulty, 2008; Mellahi & Harris, 2016). According to a review of response rate obtained in business and management literature, Mellahi and Harris (2016) find that online forms of survey record the lowest response rate, following that of a postal survey. When responding to the concern about low response rate in the survey method, previous literature suggests guidelines on boosting response rate (Nulty, 2008; Bourque & Fielder, 2003). I designed and carried out an online survey according to the guidelines on the development of survey questions by Bryman (2008) and May (2001) (See Section 4.3.1), the creation of cover letter by Bourque and Fielder (2003)

(Section 4.3.2), and the visual design of an online survey by Dillman, Smyth, and Christian (2014) (Section 4.3.3).

4.2.2. Research Design of Survey Method

Research designs, which deal with the logical framework for a survey method, broadly have three options: a cross-sectional, longitudinal, and comparative design. Among these three different types of survey design, I opted for a cross-sectional survey. In this section, I describe the characteristics of each of these three designs and explain motives for constructing the survey within the cross-sectional form.

First, a cross-sectional design describes variation between cases that is identified as characteristics, known as variables (David & Sutton, 2011). As a cross-sectional survey lies at the heart of the logic behind the use of the survey method, the cross-sectional survey represents a standard form of survey (Bryman, 2008). A main feature of a cross-sectional survey is the data on a large number of cases is collected at more or less the same time so that discussion on who and how many is included in research is made (David & Sutton, 2011; Neuman, 2011).

Second, a longitudinal design is perceived as an extension of a cross-sectional design. This is because the longitudinal form of survey is carried out not at a single time point, but at multiple time points on the same or different samples. While a survey within a cross-sectional design aims to explain a relationship by detecting the associations between variables without the time order of the variables, a survey within a longitudinal design focuses on the pace and pattern of changes across regular and relevant time differences (Neuman, 2011).

Third, a comparative research is adopted to compare different groups such as cultural differences and similarities among actors so that the actual collection of data takes place across more than two comparative groups. This type of research designs is often employed by cross-cultural or cross-national literature that examines the effect of cultural differences on the application of management practices to different institutional contexts (Entrekin & Chung, 2001), on inter-organisational relationships (Bensaou & Venkatraman, 1995; Griffith et al., 2006), and on management style (Pavett & Morris, 1995; Robert & Probst, 2000), in the field of social science.

Among these three different types of research designs, I opted for a cross-sectional design. This is because this study sought explanations not about the process of changes over time nor about the comparison of two contrasting cases, but it pursued the evaluation of

hypotheses about post-acquisition structures, post-acquisition conduct, and M&A outcomes at a moment close to a recent M&A event. Longitudinal surveys also require the commitment of respondents across multiple surveys over a long period of time, which is an unreasonable expectation given that firms will undergo material change after M&As. Moreover, the longitudinal survey design can disrupt me from evaluating causal inference due to intervening effects during certain lengthy intervals and experiencing a lack of control over samples and case losses (Oppenheim, 1992). This is likely when studying M&As. Lastly, I did not choose a comparative research design as this study dealt with the issues of what determined M&A success, taking no account of comparable cases or situations.

4.2.3. Data Sources and Survey Method

This study used both primary data and secondary data, although it relied more heavily on the former. Data sources are generally categorised into primary data, which include books, papers, and original documents produced by the people who lived during certain time when researchers are studying. In contrast, secondary data is books, papers, and documents written after the event of interest or by someone who have spent years studying the primary data of the event (Allan & Skinner, 1991; Neuman, 2011). Therefore, primary data result from immediate access to data source while secondary data result from others' summary, condensation, elaboration of the primary data (Flick, 2011).

This study relied on primary data because most of the variables developed in a hypothesised model for this study included a recent situation of respondents' behaviour and attitudes towards their most recent cross-border M&A, the questions of which were not achieved by secondary data. Besides the pursuit of the primary data, I used secondary data to acquire factual information on an acquiring firm such as firm size and firm age to control their effects on the relationships between independent variables and dependent variables and describe the characteristics of responding firms and their M&A events.

4.2.4. Summary of Survey Method Design

I designed a self-completion survey for fear that potential respondents would be too busy and geographically scattered such that participant response rates would be significantly low if a group-administered survey was applied. Moreover, expenses such as the respondents' transportation and accommodation fees to be incurred would be so vast that it could not be afforded, in the case of the adoption of a group-administered survey.

This study adopted an online survey because the advantages of a self-completion survey became more pronounced in connection with the online survey. For example, an online survey

enables the fast-return of responses and the lower costs of the use of survey development software relative to the costs that postal surveys would incur such as papers, postage (including return postage), envelopes, etc. Therefore, taking into the characteristics of potential respondents and resources available for the data collection, a self-completion survey in an online format was most suitable for this study.

The survey rested on a cross-sectional design to examine the relationships between variables of post-acquisition structures (i.e., structural integration and autonomy), post-acquisition conduct (i.e., knowledge transfer and knowledge sharing) and M&A outcomes (i.e., M&A performance and NPD performance). Data was collected over the time period June 2015 to December 2015.

4.3. Survey Design

A concern that most often arise in the application of a survey method is low response rate. In order to attract respondents' attention and their participation in a survey, it is recommended that a survey looks well-designed and professional (Dillman, 2000). Such impression is given when a survey is crafted with effective questions, accompanied with a cover letter attached to the first page of a survey, and easy to follow. In this section, I explain how survey questions were developed, what the cover letter covered for the survey, and how it was visually designed.

4.3.1. Survey Question Development

The importance of writing good survey questions cannot be overstressed. Questions that confuse or frustrate respondents disturb a survey from being completed and from producing valid and reliable data (and so findings) that precisely represent a certain phenomenon (Neuman, 2011). In this section, I present the issues of how the survey questions of my survey were constructed based on general guidance on how survey questions should be asked with respect to question format and question designs (Bryman, 2008; David & Sutton, 2011; May, 2001; Neuman, 2011; Salant & Dillman, 1994).

4.3.1.1. The Format of Survey Questions

The first consideration that should be taken into account is the format of survey questions in light of if they are open or closed. Within an open-question format, respondents are allowed to answer however they wish, whereas within a closed-question format, respondents are given a set of fixed options among which they have to give an answer (Bryman, 2008).

The advantages of an open-question format come from encouragement to respondents to provide an unlimited number of possible answers, which in turn allows for detailed, creative, and self-expression explanations about complex issues (Bryman, 2008; Neuman, 2011). This format of survey questions is used when researchers have little prior knowledge about the topic of interest and intend to explore new areas that remain uncharted terrain (Bryman, 2008; Neuman, 2011; Salant & Dillman, 1994). However, these advantages cause researchers to avoid an open-question format at the same time as it becomes difficult to extract quantitative data from such questions.

An open-question format allows for different degrees of details such that researchers may find responses irrelevant or unhelpful and view the format as time-consuming in coding the responses (Neuman, 2008). Moreover, the open-question format, within which respondents put their ideas into their own words, is very demanding for respondents as it requires their great effort to write. In particular, when respondents are asked about past experiences or issues that they have not recently considered, it is very likely for the survey to embarrass respondents. Thus, the open-question format is often recommended for studies on people's routine behaviour (Salant & Dillman, 1994). These disadvantages of an open-question format motivate researchers to select a closed-question format.

A closed-question format has great advantages in the processing of answers. By selecting, ticking, or circling an appropriate answer, respondents could easily and quickly complete a survey and do not necessarily spend a large amount of time on writing down (Bryman, 2008). As the closed-question format allows the answers selected by respondents to be mechanically recorded and coded, researchers reduce the source of bias and invalidity and easily run statistical analysis (Neuman, 2011). In spite of this, the closed-question format is not perfect with the following three disadvantages (Bryman, 2008). First, the closed-question format might frustrate respondents by offering too many choices (e.g., 20) to which they find little differences between some of the choices or by offering a few choices (e.g., 2) to which respondents are not able to find a category that they would like to choose. Second, the format may force respondents to answer for a question that they have little opinion or knowledge. Third, the closed-question format may threaten the validity of results if respondents differently interpret certain terms in answers and questions. A final issue that arises from using closed question format is common method bias (Malhotra et al., 2006). There is a danger in a survey that uses many closed format questions that spurious correlations are found due to 'box ticking' or respondents rushing to complete the survey by repeatedly selecting the same number of value as an answer. This issue is addressed in survey design (See Section 4.3.1.3).

Among these two markedly different formats, most of the questions of the survey for this study were fit into a closed-question format except for some background questions such as respondents' position title and working experience and their firm's previous experience in a host country. The choice of the closed-question format was made to take advantage of its methodological advantages in processing the answers of standardised questions and easily applying statistical measurements to a large set of survey data (David & Sutton, 2011). Moreover, as my theory dealt with the multi-faceted aspects of post-acquisition and cross-border M&As, an open-question format would be very demanding of respondents. Therefore, I denied selecting an open-question format to reduce respondents' burden of having to write extensively and spending a substantial amount of time on completing the survey in the open-question format. However, some caution was required when constructing survey questions within the closed-question format in accordance with its disadvantages.

When it came to the concerns about irritating to respondents by giving too many response choices or a few choices, I adopted seven-point Likert-scales, in which there were positive statements at one extreme position of a rating scale and negative statements at the other end (David & Sutton, 2011). This scale is widely used in measuring attitudes by empirical literature (Bryman, 2008). As with the concerns about respondents' capability to understand survey questions and answer them, I ensured the uniqueness of respondents' position as a source of information by asking them about how knowledgeable about the cross-border M&A under examination they were at the end of the survey and made sure that the respondents were capable enough to participate in the survey. In order to avoid different interpretation of terms in the survey questions, I maintained coherence in the use of terminology in all of the survey questions and gave the definition of the terms that would be understood in a different way. For example, I provided definitions of mergers and acquisitions when asking about the type of a cross-border M&A in which a respondent participated.

4.3.1.2. Survey Question Design

The second consideration that should be taken into account when researchers develop survey questions is their design in terms of wording, length, and order and procedural safeguards against Common Method Variance (CMV). The issues are significantly associated with response rates as a professionally presented survey gives respondents an impression that a survey is of significance and therefore motivates respondents to complete the survey (David & Sutton, 2011). Moreover, the presence of CMV may pose a validity threat to survey findings. In this section, I describe the design decisions made on wording, length, and order that minimise the possibility of CMV following the guidance on survey question design, which is

often given for a postal survey, but the same guidance generally holds true for an online survey as well (Bourque & Fielder, 2003).

When writing questions, wording is of central importance as different understanding of questions would be the cause of variation in answers, which would threaten validity. Following the guidelines of the wording of survey questions suggested by May (2001), I developed them as clearly, directly, and simply as possible. A detailed explanation of how the survey was pilot tested and conducted can be found in Section 4.7.

One concern that particularly drew attention when developing survey questions of M&As was the way of designating an acquiring firm and an acquired firm regarding if the acquiring and the acquired firm were treated as an independent entity or a combined entity as M&As were the activities involving both of the firms. Depending on the contexts of the questions, I worded some questions separating an acquiring firm from an acquired firm and some questions treating the acquiring and the acquired firm as a combined entity. For example, in the questions of structural integration and autonomy exercised over an acquired firm, I gave the following questions, “to what extent does your firm integrate the target firm in the following functional areas” and “to what extent does your firm grant autonomy to the target firm in the following functional areas?”. In spite of the questions of structural integration and autonomy treating an acquired firm separated from an acquiring firm, the questions of M&A performance were worded in a way of indicating the collective M&A performance that both an acquiring and acquired firm gained. Thus, the question of M&A performance was “how has your business performed in relation to the following areas?”.

Another concern about the development of M&A survey questions was the external effects of other organisational events on the questions of cross-border M&As. Therefore, I worded the survey questions that focused on the effects of cross-border M&As themselves, emphasising this phrase “Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition)” in each of the survey questions. In this way, I made sure that the questions were presented in a clear, direct, and simple way by clarifying the relationship between an acquiring and an acquired firm and specifying the outcomes of cross-border M&As that I was investigating.

When it comes to the length of surveys, it is another central issue of designing survey questions as a too long survey is negatively and directly associated with response rates, while a too short survey can fail to provide adequate information on the data required from respondents (David & Sutton, 2011). Neuman (2011) suggests that a short survey (e.g., three

pages) is appropriate for a general population. In contrast, a lengthy survey (e.g., fifteen pages) can be successful provided it includes a salient topic and targets at highly educated and specific respondents.

The survey was 7 pages in length, consisting of 20 questions, each of which had from 5 to 8 items and thereby 103 items in total. It took roughly 10 minutes for respondents to complete. As suggested by Neuman (2011), these medium- or long-length surveys would be acceptable because the potential respondents for this study were senior-level managers of UK acquiring firms, who tended to be highly educated and motivated to complete surveys that were of interest or relevance to their daily activity, strategic action, or organisational imperatives (such as successful M&A performance).

The last element that significantly influences the impression of survey and response rates is the organisation of survey questions. A well-organised survey minimises respondents' discomfort and confusion and helps researchers manage the relationships between questions and measurement tools used for each question and hypothesis (David & Sutton, 2011). In order for a survey to be well-organised, it should have opening, middle, and ending questions (Neuman, 2011). Starting with easy factual questions of M&A types that an acquiring firm got engaged in and the firm size of its acquired firm compared to the acquiring firm, the survey attracted respondents' attention. In order for the respondents to keep motivated about completing the survey, I organised interesting and topic-related questions asking about post-acquisition conduct. Then, the questions of M&A outcomes which could be seen as sensitive, were laid out. The survey finished asking the questions of respondents' personal factual information about their position and working experience in their firm and competency test about their knowledge on the questions asked in the survey. I tried to organise the survey questions on the same topic together so that the respondents did not get tired of switching from one topic to another.

4.3.1.3. Common Method Variance

Common Method Variance (CMV), which is conceptualised as spurious covariance between variables due to the same respondent (Malhotra et al., 2006), is controlled by applying two primary techniques. One is ex ante procedural remedies applied during the design of survey questions, and the latter is ex post statistical remedies applied after data collection. I explain the procedural remedies used in this section and the statistical remedies used in the section of data analysis on Harman single factor test on exploratory factor analysis (Section 4.9.1.1).

The logic behind the occurrence of CMV lies at the reliance on the same respondent, which results in false internal consistency in observed relationships (Chang et al., 2010). For example, the common respondent subconsciously searches for consistency in their responses in similar questions on the assumption about the co-occurrence of rated items, which is understood as illusory correlations (Smither et al., 1989). However, the causes of CMV are founded not only inside the common respondent themselves but also survey questions' characteristics and contexts (Podsakoff et al., 2003). Podsakoff and his colleagues (2003) argue that the manner and the contexts in which the survey questions are presented to respondents influence their understanding of survey questions and provide answers to them. For example, hidden cues in a survey may prompt people to respond in a certain way. Ambiguous wording that implies double-barrelled and multiple meanings and contains technical jargon and unfamiliar words may lead respondents to develop their own systematic response tendencies. Moreover, a lengthy survey limits respondents in accessibility to previous responses due to their short-term memory and decreases the possibility that the previous responses affect the responses to current scales, items. These potential sources of CMV hide the true relationship between variables and inflate or deflate the observed relationship between them.

Following Spector and Brannick's (1995) protocol, I controlled the occurrence of CMV, taking the following actions: (1) I placed constructs in random to prevent respondents from introducing illusory correlations and establishing systematic distortion; (2) I did not offer any hidden cue and ideal response that could influence respondents' responses; (3) I adopted neutral wording throughout survey questions to avoid item ambiguity and complexity that could influence respondents' interpretation and understanding of the questions; (4) I reduced the length of the survey to facilitate respondents' accessibility between previous and current scales; and finally (5) I provided detailed instructions for survey completion to support respondents' better understanding of the flow of the survey such as what they would be asked.

Post-hoc analysis for common method problems will be conducted using confirmatory factor analysis, which is an effective and sophisticated statistical analysis in checking common method variance (Podsakoff et al., 2003).

4.3.1.4. Summary of Survey Question Development

The survey questions for this study were laid out at a closed-question format to produce valid results through an easy coding of an enormous amount of survey data and the application of statistical analysis on rigorous information on the whole sample. In order to secure accurate results in the situations where respondents were forced to choose among pre-

determined response choices, I designed survey questions and selected the sample with great caution. I arranged seven-point Likert-scales, from which respondents were asked to select answers that best represented their views. I selected potential respondents who were capable enough to answer the survey questions asked and secured the accuracy of their information by asking about their knowledge in the last part of the survey. Moreover, I reduced respondents' confusion and vagueness that would occur in understanding the survey questions, by giving definitions of terms that could be understood in a different way. Further, I developed survey questions with great caution, taking into consideration the relationship between an acquiring and an acquired firm and the context in which survey questions intend to ask. Finally, beginning to ask about factual information on respondents' acquiring firm and its acquired firm, the survey laid out the questions covering post-acquisition structures, knowledge transfer and knowledge sharing, post-acquisition innovation, and M&A and NPD performance within 7 pages long. Therefore, the survey gave respondents an impression that the survey was well-organised and comprehensible.

In order for the survey to ensure that it reduced the likelihood of CMV occurring as far as possible, I applied five procedure remedies for potential sources coming from a common respondent and item characteristics and contexts. The survey mixed constructs and avoided any word that could confuse respondents and indicate how they could respond to the questions. Moreover, I shortened the length of the survey and helped respondents complete the survey by offering clear instructions.

4.3.2. Cover Letter

A cover letter is an explanatory text giving respondents much information about the nature and purpose of a study (David & Sutton, 2011). A well-written and informative cover letter relieves any doubt about a study and motivates respondents to complete a survey (Sarantakos, 2005). Thus, the cover letter plays a significant role in stimulating respondents' curiosity and attracting their attention to a survey so that it boosts response rates. Following the guidance suggested by Bourque and Fielder (2003), this study developed a cover letter for the survey. The cover letter was sent to respondents as a form of a pre-notification and a survey invitation with a link to the online form of survey. Copies of all letters can be found in Appendix 4.1. Additionally, a copy of the survey questionnaire can be also found in Appendix 4.2.

1. Use of Letterhead

The use of professional letterhead such as sign or endorsement by an organisation with positive name recognition for respondents indirectly serves as information about study sponsorship and a means of contacting researchers, helping establish the importance of a study in respondents' mind and their unique position as informants (Bourque & Fielder, 2003). Accordingly, the cover letter of the survey stressed the name of Durham University Business School, meanwhile stating who was conducting and financially supporting this study. In addition to the emphasis on the name of Durham University Business School, the survey included the logos of this organisation and its achievement of national and global accreditation such as AACSB, AMBA, and EQUIS.

2. Salutation

A personalised salutation on a cover letter is a technique of increasing respondents' sense of importance as informants rather than a global salutation such as "Dear Respondent" (Bourque & Fielder, 2003). I personalised each salutation in the cover letter with respondents' first and family names, firm addresses, and their position titles.

3. Purpose of the Study

Respondents are more likely to get engaged in a survey when the topic of a study has some personal relevance for the respondents (Bourque & Fielder, 2003). Thus, a brief purpose of a study might serve as a catalyst for respondents' participation in a survey, giving them a hint that what kind of questions would be asked. In the second paragraph of the cover letter, I explained problem statement on current cross-border M&A trends and the purpose of this study and tried to spark respondents' curiosity about the survey.

4. Reasons Why Respondents' Participation is Important & Why the Respondents are Chosen

Explaining why respondents' participation is important and why they are chosen to take part in a survey are another determinant of increases in response rates. I asked for respondents' contributions to the survey to develop existing knowledge of cross-border M&As, emphasising their unique position that qualified them to provide the most reliable opinions. Along with the emphasis on the importance of their participation, I explained the criteria for sample selection.

5. Incentives

Incentives are often perceived as an effective lure of respondents' participation. Some researchers prefer using monetary incentives such as small gifts or lottery tickets as a token thanks, whereas some of them prefer the summary of survey reports (Bourque & Fielder,

2003). Because I was under budgetary pressure, I chose the latter method and promised respondents complimentary reports of survey findings. This form of incentives incurred relatively inexpensive costs and was commonly used in academia.

6. An Estimate of the Time Required to Complete the Surveys

Providing the time estimated to complete a survey is another element that should be included in a cover letter. Because it takes a different amount of time for individuals to complete a survey, some people might consider the length of the time taken to complete a survey short or some of the people may find it long. Therefore, it is recommendable to indicate the length of time needed rather than to give a direct time estimate. I used the word “a short time” in the pre-notification and gave an approximate time “about 10 minutes” in the cover letter in the survey invitation, the time of which was estimated by a pre-test on the author’s supervisors.

7. Confidentiality

One emerging concern among survey respondents is the confidentiality of their data and privacy. In particular, this concern tended to be more distinctive in a survey seeking for information on the financial and market performance of respondents’ firm (Venkatraman & Ramanujam, 1986). In order to maximise respondents’ honesty and accurate perceptions of the survey questions on M&A and NPD performance, I provided as much confidentiality and anonymity to respondents as possible and promised to treat individual response as confidential.

8. Contacts

A cover letter must include contacts of someone that will be available to answer questions about a survey and to provide further information on research project. I provided phone numbers and email addresses of three people: One was myself, who was conducting the survey to accomplish this Ph.D. research; the other two were my supervisors who contributed to the conduct of research from the development of the survey questions to the analysis of the survey results and supervised this Ph.D. study.

9. Thank-you Messages

Constructing a survey accompanied with a thank-you message improves respondents’ experience of a survey. In the last paragraph of the cover letter and the last page of the survey, I expressed my gratitude to respondents for their time and efforts to this study.

4.3.3. Visual Design of Surveys

Unlike a postal survey, within which overall design and layout do not change, an online survey is differently displayed on respondents' computer screen depending on the configuration and setting of their computer (Christian et al., 2009). Though the variation in technological features on respondents' side limits surveyors' capability to enhance the variation, I designed the online survey with great caution as little influence on the completion of the survey and the quality of the responses as possible.

I utilised Qualtrics, which is a user-friendly yet professional tool for creating an effective online survey, as it is one of the most popular online survey software product, supporting diverse web browsers such as Google Chrome, Internet Explorer, Apple Safari and so on. Therefore, basic technical requirements to use of Qualtrics were minimal, and respondents could easily access to the survey offered by the software as long as they had internet access and basic computer skills.

Upon selecting the survey software, I designed the survey based on the guidance suggested by Dillman et al. (2014). According to Dillman et al. (2014), designing a survey in a respondent-friendly way helps respondents easily process a survey and provide accurate answers for questions. I set up the layouts of the survey in the following ways. First, rather designing the layout of web pages where the whole survey was put on one long scrolling page, I arranged each question block on its own page. Second, I provided navigation buttons moving to the next or previous page on the left and right side of the screen directly under the answer spaces respectively. I set up the survey allowing respondents to go back and forth between pages and screens in the case they wanted to re-read questions and amend their answers (Dillman et al., 2014). According to Dillman et al. (2014), allowing respondents to back up their responses can improve data quality. Third, the survey consistently used 'Times New Roman' font with 12 in font size and 1.5 line spacing to make questions and responses easier to read for those who had difficulty in reading. Fourth, in order to prevent respondents from offering double answers, I set up the survey prohibiting the respondents from giving two answers at the same time unless it was a multiple response question. That is, if respondents ticked two choices, the survey stopped turning to next page and alerting the respondents to their multiple choices. Fifth, I set up the survey allowing respondents to skip certain questions. This was because some of the questions such M&A performance as return on investment, return on sales, and profitability might be perceived as too sensitive to give answers. Finally, I provided a visual progress indicator to show how much of the survey was left to complete.

4.3.4. Summary of Survey Design

A careful effort was made to ensure that the survey was well-designed with effective survey questions, a professional cover letter, and the respondent-friendly visual design of the survey. The survey questions were laid out in a closed-question format and adopted seven-point Likert-scales to facilitate faster and easier statistical analysis and produce rigorous and comparable information across the whole sample. Moreover, the survey contained 20 questions and 103 items within 7 pages. In order to increase response rate, the survey was structured with the questions organised in an easy way to follow, carrying a cover letter and visually attracting respondents.

To prevent respondent fatigue, I improved the visual appearance of the survey across screens to make it look engaging and professional; (1) 'next' and 'previous' buttons were provided and consistently located underneath answer spaces across screens; (2) a consistent page layout across each question page regarding fonts, font size and variation in bolds was used; (3) the survey allowed respondents to provide only a single answer for a question and to move on without providing multiple answers to each item; and (4) the survey included a graphical progress indicator to give respondents a visual indication of their progress.

4.4. Development of Survey Questions and Variables

The survey consisted of four sets of constructs: (1) structural integration and autonomy; (2) exploitation and exploration innovation; (3) knowledge transfer and knowledge sharing; and (4) M&A performance and NPD performance. Measures were mainly sourced and adapted from well-established, validated scales from prior literature. The survey questions significantly relied on seven-point Likert scales. Thus, I asked UK acquiring firms to rate, on the seven-point Likert scales, their attitudes, behaviour, opinions on their most recent cross-border M&A.

4.4.1. Structural Integration and Autonomy

Structural integration and autonomy are hypothesised as independent variables affecting M&A and NPD performance and exploitation and exploration innovation.

Structural Integration and Autonomy: the items of structural integration and autonomy were adapted and sourced from Datta and Grant (1990) and Zaheer et al. (2013), asking survey respondents to assess the extent to which an acquiring firm integrated its acquired firm, and granted autonomy to it, in five different functional areas: market decisions, operating decisions, human resource management, R&D activities, and strategy formulation. The items of structural integration and autonomy were anchored on a seven-point Likert scale ranging

from 1 for “No integration” to 7 for “Full integration” and 1 for “No autonomy” and 7 for “Full autonomy”, respectively.

Table 4. 2 Survey Constructs, Items, and Sources of Structural Integration and Autonomy

Construct	Items	Source
Structural Integration (a 7-point Likert scale)	Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent does your firm integrate the target firm in the following functional areas?	
	Market Decisions	Datta & Grant (1990)
	Operating Decisions	Datta & Grant (1990)
	Human Resource Management	Datta & Grant (1990)
	R&D Activities	Zaheer et al. (2013)
	Strategy Formulation	Zaheer et al. (2013)
Autonomy (a 7-point Likert scale)	Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent does your firm grant autonomy to the target firm in the following functional areas?	
	Market Decisions	Datta & Grant (1990)
	Operating Decisions	Datta & Grant (1990)
	Human Resource Management	Datta & Grant (1990)
	R&D Activities	Zaheer et al. (2013)
	Strategy Formulation	Zaheer et al. (2013)

4.4.2. Exploitation and Exploration Innovation

Exploitation and exploration innovation are hypothesised as the mediators of the relationships between structural integration and autonomy and M&A and NPD performance.

Exploitation and Exploration Innovation: the variables were measured by items asking about the achievement of economies of scale and incremental improvements in existing products for exploitation innovation, and experimentations and the commercialisation and development of new products for exploration innovation. These variables were adapted from the items of exploration and exploitation innovation from Jansen et al.’s (2006), on a seven-point Likert-scale ranged from 1 for “Strongly agree” to 7 for “Strongly disagree”.

Table 4. 3 Survey Constructs, Items, and Sources of Exploitation and Exploration

Innovation

Construct	Items	Source
<p>Exploitation Innovation (a 7-point Likert scale)</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how strongly do you agree or disagree with each of the following statements?</p> <p>We frequently refine existing products and services.</p> <p>We regularly implement small adaptations to existing products and services.</p> <p>We introduce improvements to existing products and services for our market.</p> <p>We increase economies of scale in existing markets.</p>	<p>Jansen et al. (2006)</p>
<p>Exploration Innovation (a 7-point Likert scale)</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how strongly do you agree or disagree with each of the following statements?</p> <p>We invent new products and services.</p> <p>We experiment with new products and services in our market.</p> <p>We commercialise products and services that are completely new to the firm.</p>	<p>Jansen et al. (2006)</p>

4.4.3. Knowledge Transfer and Knowledge Sharing

Knowledge transfer and knowledge sharing are hypothesised as the mediators of the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

Knowledge Transfer From (and To) Acquired Firms: the knowledge-transfer mediators reflected the direction of knowledge transfer from an acquiring firm to an acquired firm and vice versa, asking the acquiring firm about the extent to which the acquiring firm transferred its knowledge resources to its acquired firm and received the acquired firm’s knowledge resources. This study argues that an acquiring firm has control over knowledge flows with its acquired firm so that the acquiring and acquired firm can build shared perspectives on knowledge transfer with each other (Capron et al., 1998; Junni et al., 2015; Reus et al., 2016). That is, the extent to which an acquired (or acquiring) firm transfers its knowledge resources to an acquiring (acquired) firm corresponds to the extent to which the acquiring (acquired) firm receives the acquired (acquiring) firm’s knowledge resources (Bresman et al., 2010). For

this reason, previous literature on knowledge transfer within M&A contexts justifies its reliance on a one-side analysis on knowledge transfer, normally an acquiring firm's perspective (Capron et al., 1998; Junni et al., 2015; Reus et al., 2016). Consistent with the previous literature, this study measured knowledge transfer, asking the acquiring firm about the extent to which the acquiring firm transferred its knowledge resources to its acquired firm and receives the acquired firm's knowledge resources. The items of knowledge transfer were adapted from Capron et al. (1998), anchored on a 7-point Likert-scale from 1 for "Very little use" to 7 for "Significant use" and from 1 for "Very little transfer" to 7 for "Significant transfer", respectively.

Knowledge Sharing: in addition to the variable of knowledge transfer capturing the flows of knowledge transfer, this study incorporated the capability-based construct of knowledge sharing into the knowledge-based mechanisms. This study measured knowledge sharing, asking the acquiring firm to indicate the perspective of a combined firm on the belief that knowledge sharing created personal and organisational value across the acquiring firm and its acquired firm and their ability to share knowledge with each other (Collins & Smith, 2006).

Taking into consideration an acquiring firm as its role as a key decision-maker providing an overall picture of post-acquisition activities, it is reasonable to argue that an acquiring firm is equipped to present knowledge sharing with its acquired firm. Moreover, this study argues that an acquiring firm can represent its acquired firm and accurately capture the acquired firm's motivation for sharing knowledge and willingness to share knowledge with it. This is because employee resistance towards an M&A event on the part of an acquired firm can be the major cause of M&A failure (Larsson & Finkelstein, 1999). An acquiring firm pays attention to an acquired firm's emotions and are well aware of the acquired employees' willingness to collaborate with the acquiring firm (Reus, 2012). Building on the assumption that an acquired firm and its employees are the primary stakeholders in M&A activities and an acquiring firm can recognise the acquired employees' reaction to their M&A, this study assessed an acquiring and acquired firm's capability to share knowledge with each other from the perspective of an acquiring firm. The items of the variable were adapted from Collins and Smith (2006) and anchored on a 7-point Likert-scale from 1 for "Strongly disagree" to 7 for "Strongly agree".

Table 4. 4 Survey Constructs, Items, and Sources of Knowledge Transfer and Knowledge Sharing

Construct	Items	Source
<p>Knowledge Transfer From Acquired Firms (a 7-point Likert scale)</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent has your firm used resources from the target firm to assist your own?</p> <p>Use of the target firm's innovation capabilities</p> <p>Use of the target firm's know-how in processes</p> <p>Use of the target firm's sales networks</p> <p>Use of the target firm's managerial capabilities</p>	<p>Capron et al. (1998)</p>
<p>Knowledge Transfer To Acquired Firms (a 7-point Likert scale)</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent has your firm transferred resources to the target firm to assist it?</p> <p>Transfer of innovation capabilities to the target firm</p> <p>Transfer of know-how to the target firm</p> <p>Integration of products from the target firm into our firm's sales networks</p> <p>Transfer of managerial capabilities to the target firm</p>	<p>Capron et al. (1998)</p>
<p>Knowledge sharing (a 7-point Likert scale)</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) together, how strongly do you agree or disagree with each of the following statements?</p> <p>Employees see benefits from exchanging and combining ideas with one another.</p> <p>Employees believe that by exchanging and combining ideas they can move new projects or initiatives forward more quickly than by working alone.</p> <p>Employees are proficient at combining and exchanging ideas to solve problems or create opportunities.</p> <p>Employees do a good job of sharing their individual ideas.</p> <p>Employees are capable of sharing their expertise to bring new projects or initiatives to fruition.</p> <p>Employees are willing to exchange and combine ideas with their co-workers.</p>	<p>Collins & Smith (2006)</p>

4.4.4. Cross-border M&A Performance

M&A and NPD performance are hypothesised as dependent variables determined by the independent variables of structural integration and autonomy. In this section, I explain the measures of M&A and NPD performance used in this study.

4.4.4.1. M&A Performance

The methodological spectrum of M&A performance is so wide that there are few agreements over M&A performance measures and inconsistent findings as a result. This can be attributable to the multidimensional and multilevel nature of M&A performance where researchers have to clarify research methods, analysis levels, and M&A performance indicators (Zollo & Meier, 2008). In this regard, it is important to provide a detailed review of a mechanism of M&A performance measures used in existing literature and to explain the reasoning behind the decision to construct M&A performance measures for this study.

4.4.4.1.1. M&A Performance Methods

While M&As are widely discussed in financial disciplines, they rely on the objective measures of M&A performance such as accounting-based measures as return on assets (Zollo & Singh, 2004), in which any benefits arising from M&A events eventually appear (Tuch & O'Sullivan, 2007), and such market-based measures as cumulative abnormal returns (Cording et al., 2008), which provide an indication of market expectations of future value (Stahl & Voigt, 2008). As the accounting-based measures and the market-based measures are well-known performance measures free from human bias in data collection and inaccurate information, this line of M&A performance measures continues in the research fields of human resource management (Ataullah et al., 2014) and strategic management (Cording et al., 2008; Zollo & Singh, 2004). Nevertheless, the following difficulties and problems associated with the use of the objective measures of M&A performance stimulate researchers to employ the subjective assessments of M&A performance (e.g., Ambrosini et al., 2011; Bruton et al., 1994; Capron, 1999; Datta, 1991; Homburg & Bucorius, 2006; Reus & Lamont, 2009; Very et al., 1997), such that managers assess M&A performance regarding their overall satisfaction with M&As (Datta, 1991) or the extent to which M&As meet their original goals and objectives (Homburg & Bucorius, 2006).

The sample selection criteria for this study did not restrict firm size and capital structure to make the generalisation of research findings to a wider population regardless firm size and industry sectors. Therefore, objective measures cannot be indiscriminately applied to this study due to difficulties in obtaining objective financial data in small, private firms, or conglomerates and looking at the true effects of conglomerates' M&A events (Bruton et al., 1994; Datta, 1991; Dess & Robinson, 1984; Geringer & Hebert, 1991; Zollo & Meier, 2008). Market-based data are only available on publicly quoted firms. Accounting-based data are not legally required of privately-held firms publishing. Thus, access to such objective financial data on smaller, privately held firms is likely to be restricted (Covin & Slevin, 1989; Dess & Robinson,

1984; Haber et al., 2005). In the case of conglomerates, the objective measures of M&A performance do not accurately reflect the true economic outcomes of that M&A (Dess & Robinson, 1984). Conglomerates tend to be so large and diversified that their allocation of resources, assets, and sales is complex and ambiguous across their business units (Dess & Robinson, 1984). Stated differently, it is virtually impossible to isolate the effects of certain M&As from those of other events (Datta, 1991; Datta & Grant, 1990; Nadolska & Barkema, 2014). Therefore, it was difficult and problematic to achieve and employ objective financial measures for this study that did not restrict firm size and capital structure. Table 4.13 in Section 4.8 describes the firm size and capital structure of the respondent firms.

Responding to the potential limitations that arise in the use of objective measures over small, private firms and conglomerates, subjective measures emerge as an alternative means of assessing M&A performance. Subjective measures allow researchers to accurately grasp M&As' relative performance in a more multi-dimensional way (Larsson & Finkelstein, 1999). Therefore, subjective measures are claimed to be flexible and useful beyond the restrictions imposed by objective measures. Moreover, evidence of correlation between objective and subjective measures (Dess & Robinson, 1984; Zollo & Meier, 2008) and the strong reliability and validity of subjective measures strengthen their usefulness (Chandler & Hanks, 1993; Venkatraman & Ramanujam, 1987).

This study whose samples included small and privately-held firms was concerned about the availability and accessibility of the financial data on the sampling firms, and the influence of other exogenous events on the performance measures of cross-border M&As, in the case of the application of objective measures. Acknowledging the aforementioned potential limitations in obtaining the objective measures of firm performance and the methodological validity of subjective measures, I alleviated the concerns about the achievement of reliable data by adopting subjective measures of M&A performance over objective measures.

4.4.4.1.2. Analysis Levels of M&A Performance Measures

The measures of M&A performance in prior literature are constructed at a transaction-level (Bruton et al., 1994; Cannella & Hambrick, 1993; Capron, 1999) or a firm-level (Anand & Singh, 1997), which can be subdivided at a one-side analysis (Pablo, 1994) or a dyadic analysis (Allatta & Singh, 2011). The transaction-level analysis intends to measure all of the value created by focal M&As without regard to the process in which the M&As influence the overall business performance of an acquiring and acquired firm (Ambrosini et al., 2011). This level of analysis evaluates M&A performance by external informants such as academic faculties,

investors, and security analysts (Bruton et al., 1994; Cannella & Hambrick, 1993; Hayward, 2002; Hunt, 1990) and/or internal informants such as executives of an acquiring firm (Ambrosini et al., 2011; Cannella & Hambrick, 1993; Capron, 1999; Datta, 1991; Datta & Grant, 1990). External informants evaluate M&A performance based on excerpts from all the published accounts including industry report, stock-market analysis, and financial press reports regarding the estimated results of an M&A event (Bruton et al., 1994). While external informants get engaged in measuring M&A performance based on the objective and secondary data of that M&A event, internal informants, who are the sources of primary data, give their subjective assessments of M&A performance by means of surveys or interviews.

In contrast to the transaction-level analysis at which researchers can limit their focus on the assessment of M&A performance, the firm-level analysis, at which researchers measure the aggregated performance of an acquiring firm based on its public releases such as annual reports (Cording et al., 2008), indicates not the performance of specific M&A events but the combined performance with other related businesses of an acquiring firm (Bergh, 2001). Therefore, this level analysis measures not only the successfulness of M&As themselves but also the contribution of other organisational events (Bergh, 2001; Zollo & Meier, 2008).

The issues of the analysis levels in M&A performance measures can be subdivided into a one-side analysis or a dyadic one. Although M&As are clearly a dyadic phenomenon, many M&A studies seek for data from the one-side perspective of either an acquiring firm (Datta, 1991) or an acquired firm (Calori et al., 1994) due to the acknowledgement of many inherent limitations of the dyadic analysis, which are addressed below (Oppenheim, 1992; Walsh, 1988).

In the case of the adoption of subjective assessments, it may be difficult for researchers to track the success of M&As from an acquired-firm side and obtain valid survey responses from the acquired firm. This is because the senior-level managers from an acquired firm tend to turn over more quickly than from a non-acquired firm following M&As (Walsh, 1988). Moreover, another distinctive limitation that literature on cross-border M&As often encounters is the achievement of valid data in cross-cultural contexts (Oppenheim, 1992). For example, Calori et al. (1994) study M&A performance from the viewpoint of French and British acquired firms and collect data from the two linguistic versions of a survey. However, in such studies taking a scale from one country to another, the researchers never know whether the questions and responses concerned are structured in the same way in another country without any changes in their meanings and overtones (Oppenheim, 1992). Owing to the difficulties of translation conveying the equivalent meanings of a statement, much literature on cross-border

M&As prefers a single test site such as the USA (Zollo & Singh, 2004), the UK (Ahammad & Glaister, 2013), and China (Zhang et al., 2015). Alternatively, in the case of the adoption of objective measures, it might be very difficult to attain that separate accounting data of an acquired firm. This is because it can be consolidated into its acquiring firm as a business segment so that the accounting data published by the acquiring firm incorporates the overall business performance of its other business segments. In a similar vein, the market-based data of an acquired firm may be absent as it is too small to issue stock price or no longer exists as an independent entity following an M&A. Thus, an acquiring firm is claimed to be the most capable to provide reliable, valid, and accurate information on M&As. For these reasons, I find that a great deal of existing literature on M&As measure M&A performance from the perspective of a single party, in particular an acquiring-firm perspective (Datta, 1991; Datta & Grant, 1990).

Despite a dominant position of an acquiring firm in structuring post-acquisition conduct with an acquired firm and the limited accessibility and availability of data from an acquired firm, there are a few studies collecting data on M&A performance from an acquired-firm side (Calori et al., 1994; Very et al., 1997; Zueva-Owens et al., 2011). However, literature examining M&A performance held by an acquired firm excludes outcomes that an acquiring firm gains from that M&A (Calori et al., 1994; Very et al., 1997; Zueva-Owens et al., 2011), which is likely to give limited understanding of M&A performance. Moreover, some studies assess M&A performance based on the divestment of an acquired firm (Bergh, 2001; Nadolska & Barkema, 2014; Vermeulen & Barkema, 2001). However, this divestment measure is often described as too coarse-grained (Cannella & Hambrick, 1993) and may give limited understanding of M&A performance.

A large number of current studies on M&As rely on the one-side analysis and the perspective of an acquiring firm (Datta & Grant, 1990; Pablo, 1994; Zollo & Singh, 2004). This is because an acquiring firm has decision-making power of post-acquisition structure and conduct and an acquired firm is forced to follow its acquiring firm's ways of doing things (Pablo, 1994). Furthermore, it may be difficult to attain valid data from an acquired firm as many of acquired firms may have been divested or consolidated into their acquiring firm according to its international strategy or motives for participation in M&As such as pre-empting competitors (Bergh, 2001). Therefore, those studies measuring M&A performance prefer taking an acquiring firm's perspective by means of primary data such as surveys (Datta, 1991; Datta & Grant, 1990). Table 4.5 summarises previous literature on M&A performance measures according to analysis levels and source of data.

Table 4. 5 Review of Previous Literature on M&A Performance

Analysis Levels	Subjective Measures		Objective Measures
	Source of Data	Literature	Literature
Transaction-Levels	Acquiring Firm	<p>Ahammad et al. (2016)</p> <p>Ambrosini et al. (2011)</p> <p>Birkinshaw et al. (2000)</p> <p>Brock (2005)</p> <p>Cannella & Hambrick (1993)</p> <p>Capron (1999)</p> <p>Capron et al. (2001)</p> <p>Datta & Grant (1990)</p> <p>Datta (1991)</p> <p>Homburg & Bucerius (2006)</p> <p>Kiessling et al. (2012)</p> <p>Morosini et al. (1998)</p> <p>Reus & Lamont (2009)</p> <p>Reus et al. (2016)</p> <p>Saxton & Dollinger (2004)</p> <p>Schoenberg (2004)</p> <p>Sinkovics et al. (2015)</p> <p>Slangen (2006)</p> <p>Stahl et al. (2011)</p>	<p>Hayward (2002)</p> <p>Larsson & Finkelstein (1999)</p>
	Acquired Firm	<p>Birkinshaw et al. (2000)</p> <p>Calori et al. (1994)</p> <p>Child et al. (1999)</p> <p>Very et al. (1996)</p> <p>Very et al. (1997)</p> <p>Zueva-Owens et al. (2011)</p>	
Firm-Levels	Acquiring Firm	<p>Ahammad & Glaister (2013)</p>	<p>Almor et al. (2014)</p> <p>Anand & Singh (1997)</p> <p>Ataullah et al. (2014)</p> <p>Basuil & Datta (2015)</p> <p>Bauer & Matzler (2014)</p> <p>Bertrand & Capron (2015)</p> <p>Capron & Pistre (2002)</p> <p>Carow et al. (2004)</p> <p>Chatterjee et al. (1992)</p> <p>Cording et al. (2008)</p> <p>Datta et al. (1992)</p> <p>Dikova & Sahib (2013)</p> <p>Du & Boateng (2015)</p> <p>Ellis et al. (2011)</p> <p>Finkelstein & Halebian (2002)</p>

			Gubbi & Elango (2016) Harrison et al. (1991) Hayward (2002) Homburg & Bucerius (2005) Jory & Ngo (2014) Kim & Finkelstein (2009) King et al. (2008) Kling et al. (2014) Krishnan et al. (1997) Lin (2014) Markides & Itter (1994) Ning et al. (2014) Ramaswamy (1997) Reus & Lamont (2009) Sears & Hoetker (2014) Stahl & Voigt (2008) Sudarsanam & Mahate (2006) Weber (1996) Zollo & Singh (2004)
	Acquired Firm		Bergh (2001) Buckley et al. (2014) Homburg & Bucerius (2005) Nadolska & Barkema (2014) Rogan & Sorenson (2014) Vermeulen & Barkema (2001)

Adopting a survey method in this study, it analysed M&A performance at the transaction-level from the perspective of an acquiring firm. In so doing, this study stayed focused on the performance effects of the M&A event of interest and controlled the potential external influences of other business processes simultaneously on-going within the sampling acquiring firms. Additionally, this study did not collect information on M&A performance and examine it from the perspective of an acquired firm. It was due to difficulties in collecting valid data from an acquired firm that was located in a linguistically distant country and might be consolidated into its acquiring firm or even stops existing. Moreover, an acquired firm's perception of M&A performance may provide limited insights into M&A performance that an acquiring firm would perceive. Taking into account the accessibility and availability of reliable data on M&A performance, I studied M&A performance at the transaction-level and took the perspective of an acquiring firm.

4.4.4.1.3. M&A Performance Measures

The conflicting findings of M&A performance can be attributable to the limited use of M&A performance measures. Much existing literature on M&As adopts only one measure of M&A performance (Brouthers et al., 1998; Papadakis & Thanos, 2010), although performance is operationalised at multi-dimensional constructs (Venkatraman & Ramanujam, 1986). According to a performance measurement framework suggested by Venkatraman and Ramanujam (1986), performance is operationalised at three different layers: (1) financial performance, which is the narrowest conception of business performance and mostly widely adopted as a performance measure; (2) operational performance (or market-related performance), which consists of the determinants of profitability such as market share, new product introduction, product quality, and other measures of technological efficiency determining market-share position and leading to financial performance in the end; (3) organisational effectiveness, which is the broadest conceptualisation of performance but the most less applied measure due to difficulties in measuring effectiveness.

Beyond previous literature's over-reliance on only one measure of M&A performance (Ambrosini et al., 2011; Capron, 1999) and following Venkatraman and Ramanujam's (1986) suggestion of the diverse conceptualisation of performance constructs, this study used the first two performance measures of financial and market dimensions of M&A performance (Schoenberg, 2004). This study excluded the last layer of the performance constructs (i.e., organisational effectiveness). This was based on Arino's (2013) argument that the measure of organisational effectiveness was so comprehensive that it was likely to overlap the measures of the first and second layers of the performance constructs. Thus, I laid out four indicators of finance performance (i.e., return on investment, earning per share, share price, and profitability) and four indicators of market-related performance (i.e., market share, sales volume, sales growth, and return on sales) adapted and sourced from Katsikeas et al. (2006), Schoenberg (2004), and Vorhies & Morgan (2005). The performance items were used on a seven-point Likert scale, ranging from 1 (= "Highly dissatisfactory") to 7 (= "Highly satisfactory").

Table 4. 6 Survey Constructs, Items, and Sources of M&A Performance

Construct	Items	Source
M&A Performance (a 7-point Likert scale)	Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how has your business performed in relation to the following areas?	
	Market share	Vorhies & Morgan (2005)
	Sales volume	Katsikeas et al. (2006)
	Sales growth	Schoenberg (2004)
	Return on investment	Schoenberg (2004)
	Return on sales	Schoenberg (2004)
	Profitability,	Vorhies & Morgan (2005)
	Earnings per share	Schoenberg (2004)
Share price	Schoenberg (2004)	

4.4.4.1.4. Summary of M&A Performance Measures

The sampling firms in this study varied in size and capital structure. Thus, in some cases, objective financial data such as accounting data and stock price was not publicly available, and in some other cases, financial data released were likely to aggregate the whole performance of an acquiring firm without the separation of the performance of its other business segments from that of its M&As themselves (Gilley & Rasheed, 2000; Zollo & Singh, 2004). Hence, the firm-level analysis was not free from the exogenous effects of other organisational events. It was difficult to restrict focus on the performance of M&As themselves. As a result, this study excluded the use of objective data at the transaction-level and firm-level analysis but used subjective data on the performance effects of cross-border M&As provided by an acquiring firm.

Potential limitations imposed on the achievement of reliable data from an acquired firm discouraged us from adopting neither a dyadic analysis nor a one-side analysis from an acquired-firm perspective but the one-side analysis from an acquiring-firm perspective. First, an acquired firm might be consolidated into its acquiring firm so that the perspectives of the acquired firm on its M&A events might be not readily available. Second, the M&A performance of an acquired firm little reflects that of an acquiring firm. Third, the methodological limitations in a process in which researchers have to translate their survey into another linguistic version tailored for an acquired firm that is linguistically diverse can threaten the validity of survey results due to a difficulty in translating. Meanwhile, taking into consideration the role of an acquiring firm as a leader and its acquired firm as a follower in their M&As, it is arguable that an acquiring firm is the most capable to assess M&A performance and has the

best knowledge about the performance effects of cross-border M&As (Ellis et al., 2009). Therefore, this study took the perception of M&A performance at an acquiring firm and achieved data from its senior-level managers.

Taking into consideration the multi-dimensional nature of M&A performance, this study captured the finance and market dimensions of M&A performance, which were the most widely cited performance measures; however, this study ruled out organisational effectiveness due to its too inclusive and comprehensive character (Arino, 2013). In conclusion, this study measured cross-border M&A performance by asking the senior-level managers of an acquiring firm about their views on the finance and market performance of their most recent cross-border M&A.

4.4.4.2. New Product Development (NPD) Performance

In addition to the financial and market measures of M&A performance, this study included NPD performance measures to assess the performance of post-acquisition innovation. In this respect, I operationalised NPD performance using five items adapted from Atuahene-Gima et al. (2005). The items of NPD performance were anchored on a 7-point Likert scale ranging from 1 for “Much worse” to 7 for “Much better”.

Table 4. 7 Survey Constructs, Items, and Sources of NPD Performance

Construct	Items	Source
<p style="text-align: center;">NPD Performance (a 7-point Likert scale)</p>	<p>Thinking about your firm and the target firm of your most cross-border recent merger (or acquisition) now, to what extent has new product development performance improved following the cross-border merger (or acquisition)?</p> <p>Revenues from new products compared with business objectives</p> <p>Growth in revenues from new products compared with business objectives</p> <p>Profitability of new products compared with your business objectives</p> <p>Growth in profitability of new products compared with business objectives</p> <p>Growth in sales of new products compared with business objectives</p>	<p style="text-align: center;">Atuahene-Gima et al. (2005)</p>

4.4.5. Control Variables

This study included six control variables frequently used in M&A research to account and control for factors that might explain part of the relationships between the independent

variables of structural integration and autonomy and the dependent variables of M&A and NPD performance by the following variables:

Firm Size. Firm size, which is a commonly used control variable (Puranam et al., 2009; Saxton & Dollinger, 2004), indicates market power, slack resources, and diversification (Haveman, 1993; Lane et al., 1998). For example, Haveman (1993) finds that large firms have more capabilities to offer their existing product lines to new markets and rapidly penetrate into them, which improves firm performance. By contrast, it is difficult for small firms to rapidly expand markets and survive due to their scarce resources. In this regard, M&A outcomes would be affected by firm size. I added the control variable of firm size which was measured by the number of employees (Cefis & Marsili, 2015), and used its natural log forms.

Firm Age. A firm's age is indicative of its knowledge, resources, and capabilities (Henderson, 1999). A firm serves as organisational memory and the loci of knowledge. As a firm experiences over time, it develops knowledge, resources, and capabilities that guide what a firm can do. Therefore, older firms tend to have more knowledge, capabilities, and resources that drive superior firm performance than younger firms. Therefore, firm age was added as a control variable taken as a numeric variable equal to the exact number of years that an acquiring firm had operated.

Outcome Control. This variable evaluates the effect of an acquiring firm on outputs that an acquired firm produces without the consideration of how the outputs are achieved (Tiwana & Keil, 2007). This variable was incorporated into a set of the control variables to prevent from affecting particularly the effects of autonomy. While autonomy is taken in the form of control over behaviour and process, outcome control is another form of control limited to outcomes and goals, allowing for high degrees of flexibility in the course of tasks being fulfilled with little behaviour monitoring (Kreutzer et al., 2015). Therefore, outcome control, which can be viewed as a narrow level of autonomy, can affect the relationships between autonomy and M&A and NPD performance. The items of outcome control were adapted from Tiwana and Keil (2007), anchored on a 7-point Likert-scale from 1 for "Strongly disagree" and 7 for "Strongly agree".

Table 4. 8 Survey Constructs, Items, and Sources of Outcome Control

Construct	Items	Source
Outcome Control (a 7-point Likert scale)	Thinking about how your firm exerts control onto the target firm of your most recent cross-border merger (or acquisition), how strongly do you agree or disagree with each of the following statements? Our firm places significant weight on timely project completion. Our firm places significant weight on project completion within budget. Our firm places significant weight on meeting our requirements. Our firm places significant weight on accomplishing project goals.	Tiwana & Keil (2007)

Shared Goals. M&As where an acquiring and acquired firm establish common goals, visions, and beliefs can improve M&A performance, reducing conflicts between acquiring and acquired employees (Larsson & Finkelstein, 1999; Stahl & Voigt, 2008). Therefore, this study adapted from the measure of shared goals from McQuiston (2001) and controlled their effects. The items were anchored on a 7-point Likert-scale from 1 for “Strongly disagree” to 7 for “Strongly agree”.

Table 4. 9 Survey Constructs, Items, and Sources of Shared Goal

Construct	Items	Source
Shared Goals (a 7-point Likert scale)	Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how strongly do you agree or disagree with each of the following statements? We share a joint vision of what is necessary for mutual success. We know with certainty what we expect of each other. We proactively work together to establish annual sales goals. We can state with certainty that we have the same basic beliefs about running a business.	McQuiston (2001)

Macro- and Micro-Environmental Factors. I restricted the sampling frame to UK acquiring firms. This could be subject to institutional predispositions of their management during the post-acquisition process (Birkinshaw et al., 2000). In order to generalise the findings of this study beyond the confine of this research location, I controlled the effects of institutional differences between a home country, the UK in this case, and a host country in which an acquired firm was located. Respondents were asked about their perception of the

degree to which their home country was different from the host country in terms of (1) micro-environments (customer characteristics, market munificence, market turbulence), which influence the design of firm strategy, and (2) macro-environments (economic condition, technological turbulence, socio-cultural condition, and regulations condition), which consist of task environment. I measured these two different sets of contingency factors adapted from prior literature by Zeriti et al. (2014) on a 7-point Likert-scale from 1 for “Very different” to 7 for “Very similar”.

Table 4. 10 Survey Constructs, Items, and Sources of Micro-and Macro-Environmental Factors

Construct	Items	Source
Micro-Environmental Factors	Comparing the UK market with the host market in which your most recent cross-border merger (or acquisition) is based, to what extent do you see the UK market as similar to or different from the host market with regard to the following areas?	Zeriti et al. (2014)
Customer Characteristics	Customers' price sensitivity Product/service evaluation criteria Customers' sensitivity to purchasing criteria Usage patterns of products/services	
Market Munificence	Market growth Potential profitability Market size	
Market Turbulence	Rate of competitors' strategic changes Rate of unexpected competitor entry Rate of competitor exit Rate of competitors' new product introductions Rate of change in customer product preferences Rate of change in customer demand Pressure from new customers	
Macro-Environmental Factors	Comparing the UK market with the host market in which your most recent cross-border merger (or acquisition) is based, to what extent do you see the UK market as similar to or different from the host market with regard to the following areas?	
Economic Condition	Level of industrial development Communications infrastructure Inflation rates	

Technological Turbulence	Rate of minor technological change Rate of new technological development Pressure for technological change
Socio-Cultural Condition	Cultural, values, beliefs, and attitudes Aesthetics preferences Cultural customs and traditions Religious traditions concerning the environment and society
Regulatory Conditions	Laws and regulations concerning company protection Laws and regulations concerning customer protection Laws and regulations concerning mergers and acquisitions Laws and regulations concerning competition Taxation

4.4.6. Summary of Development of Survey Questions and Variables

I adopted most of the variables adapted and sourced from previous measures within seven-point Likert scales and explained how the variables in the hypothesised model were measured in the above sections. Structural integration and autonomy, which are predicted as the antecedents of M&A and NPD performance, were measured by the extent to which an acquiring firm integrated the functional activities of its acquired firm and provided the acquired firm with autonomy over its functional operations. The variables of knowledge transfer and knowledge sharing, which are hypothesised to mediate the effects of structural integration on exploitation innovation and autonomy on exploration innovation, were measured by knowledge transfer from/to an acquiring firm to/from an acquired firm and their capability to share knowledge. Further, exploitation and exploration innovation, which are predicted as mediators influencing the relationships between structural integration and autonomy and M&A and NPD performance, were adapted from previous literature on organisational ambidexterity. M&A and NPD performance, which are hypothesised as the dependent variables in the model, were measured by respondents' subjective assessments of cross-border M&A and NPD performance.

I controlled the relationships between the independent and dependent variables by adding the control variables of firm size, firm age, outcome control, shared goals, and macro- and micro- environmental factors, each of which was measured as follows; (1) firm size was measured by the number of employees of an acquiring firm; (2) firm age was calculated by the

number of years an acquiring firm operated; (3) outcome control was captured by an acquiring firm's control over its acquired firm's final outputs; (4) share goals were measured by shared goals, visions, and beliefs between an acquiring and acquired firm; and (5) macro- and micro-environmental factors were captured by institutional differences between an acquiring firm's home country and an acquired firm's host country perceived by respondents.

4.5. Research Setting

I selected the United Kingdom as a research setting because it was one of the largest cross-border M&A investors, with the USA and Germany. While the USA and Germany participated in the first and third largest number of cross-border M&As, with 2,061 and 423 purchases in 2014, respectively, the UK recorded the second largest cross-border M&A investor with 859 purchases in the equivalent year.

Taking into consideration the decreasing value of the UK's cross-border M&A purchases from US \$3 billion in 2013 to US \$-79 billion in 2014 as seen in Table 4.11, there might be a doubt about the importance of the UK in global cross-border M&A trends. However, this negative trend towards the UK's cross-border M&A purchases was led by its large equity divestments abroad such as Vodafone's divestment of its stake in Verizon Wireless (UNCTAD, 2015). Moreover, there were downward cross-border M&A over the world since 2008 mainly due to economic slowdowns (Gestrin, 2014). However, 859 cross-border M&A deals that the UK-based investors purchased in 2014 showed that the UK was ranked as the second highest country following the USA, which indicated that the UK remained a leading country of global cross-border M&A trends. In this sense, this study argues that global cross-border M&A trends are significantly influenced by UK investors. It is worth basing this study on the UK as a research location and UK acquiring firms as a representative sample from the population of global cross-border M&As.

Table 4. 11 Cross-Border M&As between 1990 and 2014 (Billions of US Dollars)

	Region/ Economy	1990	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Value of Cross-Border M&A Purchases*	World	98	959	535	619	1,032	617	287	347	553	328	312	398
	US	12	111	90	115	180	-30	24	85	137	72	58	86
	UK	5	339	47	12	230	52	27	-3.9	69	-2	3	-79
	Germany	3	9	5	15	59	63	26	7	5	15	6	29
Number of Cross-Border M&A Purchases	World	3,442	10,517	9,407	10,363	12,044	11,106	8,691	9,938	10,187	9,630	8,487	9,696
	US	682	2,327	1,817	2,066	2,245	1,966	1,379	1,724	1,896	1,879	1,686	2,061
	UK	620	1,351	1,112	1,196	1,373	1,104	695	799	916	780	758	859
	Germany	159	862	505	534	618	579	502	431	519	465	400	423

Note. * The value of cross-border M&A purchases is calculated on a net basis as follows: Purchases of firms abroad by acquiring firms (-) Sales of foreign affiliates of firms. The data cover only those deals that involved an acquisition of an equity stake of more than 10%. Data refer to the net purchases by the region/economy of the ultimate acquiring company.

(Sources: United Nations Conference on Trade and Development (UNCTAD), 2015. World Investment Report 2015. United Nations.)

4.6. Sampling Frame and Sample Size

This study observed cross-border M&As completed between UK acquiring firms and non-UK acquired firms between January 2012 and July 2015 and with a 100% full equity stake purchased by the acquiring firms. This specific time period was chosen: (1) to reflect the most recent M&A fashion (Bergh, 2001); (2) to relieve respondents' burden of recalling an organisational event which is held from a practical standpoint; and (3) to prevent memory and distortion problems of respondents, which could take place in the case that observations would include a span of long or old time (Papadakis & Thanos, 2010).

The database *Thomson One Banker* was used to determine the population and subsequent sampling frame of cross-border M&As by UK firms because *Thomson One Banker* was an M&A specialised database providing a variety of information on bidders and target firms such as their country of origin and firm name, and M&A deals such as announcement and effective date of deals, deal status, and deal values, there were 1,658 cross-border M&A deals completed by 1,022 UK acquiring firms with full equity share during the period between January 2012 and July 2015. In order to construct the sample for this study, I screened the starting sample of the 1,022 acquiring firms on the criteria of location, firm status, and data accessibility.

First, in the case acquiring firms were re-located to their host country or any other country afterwards; I confirmed their location from their corporate web-sites and annual reports. I defined UK-based firms if their corporate web-sites and annual reports specified that they were addressed in the UK. In this way, I ensured the sampling firms' location.

Second, continuing the issues of the location of the samples, I eliminated those firms who were not physically situated in the UK. I found that a few of the sampling firms were registered as "a UK firm" to take advantage of double tax treaties though they were actually situated outside the UK. I confirmed their physical location by their replies to a survey invitation. For example, a firm said that it was not in the UK but in another country, responding to a pre-notification with the explanation about the criteria for the sample selection.

Third, I removed those firms who were acquired or went bankrupt after their most recent cross-border M&As. Along with the focus of this study on post-acquisition issues, it was vital to make sure that the sampling firms could offer information on post-acquisition structure and conduct and how they affected M&A and NPD performance. Thus, I believed that the samples who stopped existing or were under control by another entity were not likely to be eligible for the survey since M&A decisions related to post-acquisition structure and conduct

would be affected by a third party, an ex-post parent firm for example. I defined a firm as ceased to exist or being acquired afterwards if its corporate web-sites were not able to be found (Almor et al., 2014). Internet research results reported that the firm ceased to exist and/or was acquired by another firm after its cross-border M&A (Almor et al., 2014).

Fourth, I dropped the firms whose contact details were not achievable however. 277 firms of the starting samples did not publish any press releases nor build their official web-sites. Though a great deal of the samples had their own corporate web-sites, 51 firms did not provide detailed contact information such as top management team of the firm and even firm address. I dropped those firms who exhibited lacks of data accessibility and rather devoted my efforts to search those firms who clearly expressed where they were located and to whom I was going to send the survey.

Lastly, I excluded those firms who participated in cross-border M&As for investment purposes or on behalf of their customers. Consulting firms such as investing and law firms purchased firms without any intention to engage in post-acquisition conduct but for investing in them or on behalf of their customers. In this regard, I believed that it was inappropriate to include these investing and advisory firms in the sampling frame. However, it was not certain about the motives for the sampling firms' participation in their cross-border M&A. Hence, I excluded those consulting firms from the survey distribution list when I confirmed that the reasons why they had purchased an acquired firm were not related to what this study intended to examine according to the sampling firms' reply to a pre-notification and a survey invitation.

This screening procedure protected me from distracting attention to unapproachable, uncontactable sample and helped me to focus on the representative sample of the whole population and gain reliable and valid data from them. These efforts helped reduce the danger of sampling error (Murphy, 2002). As a result of the application of the screening procedure, I compiled a workable sample of 593 acquiring firms.

Along with the construction of the sampling firms, I paid my attention to who I was going to send the survey to. Consistent with previous arguments provided by Capron (1999) and Datta (1991), I incorporated the CEOs and senior-level managers of the sampling firms into the survey distribution list as they were directly concerned with decisions on M&A deals, and they were the most knowledgeable informants about M&A strategy and M&A outcomes. As a consequence, I searched potential respondents' name, position title, and contact details such as emails and telephone numbers from their firm's corporate web-sites and annual reports,

and LEXIS/NEXUS UK, the latter of which was an integrated information provider offering documents and records on firm news and financial information.

In summary, I drew starting samples from the selection criteria on location, M&A timing, and the percentage of equity shares of cross-border M&As completed between UK acquiring firms and non-UK acquired firms. Then I further narrowed down to the samples that were accessible, contactable, and capable to provide precise information on their M&A. Therefore, the initial sample population of 1,022 acquiring firms were reduced to the sample size of 593 acquiring firms. The online survey for this study was sent to the UK-based senior-level managers of the 593 acquiring firms such as Chief Executive Officers, Chief Financial Officer, Chief Operating Officers, and Business Development Directors, who were likely to get engaged in M&A decisions and post-acquisition conduct and could provide accurate impression and perspectives on their M&A outcomes.

4.7. Data Collection Procedure

The first draft of a survey is never perfect. Developing a survey alongside a cover letter and survey questions, I administered the survey to determine the accuracy of the measures and the statements. By conducting a pilot study, I identified problematic questions that could make respondents feel confused and be interpreted in a different way. Then, I improved the preliminary version of the survey and officially distributed its final version to the sampling firms. In this section, I discuss the implementation of the pilot study and the procedure for the collection of survey data.

I pre-tested the preliminary version of the survey on academic researchers at Durham University Business School including those academics whose work was cited in the survey questions. The reasons for not carrying out a pilot test on firms in the sample were that the sample size was so small and specific that I could not afford to use up any part of it as pre-test sample (Oppenheim, 1992). I asked the academics to comment on any survey questions and items that they found difficult to understand and interpret. I invited 54 academics by emails attached with a paper-based survey in April 2015 and received seven replies with constructive feedback.

The overall feedback of the pilot study was positive but several concerns and recommendations were raised. Edits were made accordingly. First, most of the participants were concerned about the length of the survey. The preliminary version of the survey was 8 pages long, with 25 questions, which would discourage respondents from participating in the survey. In order to increase response rates, I reduced the survey questions from 25 to 20

within 7 pages. Also, another issue raised was the use of terminology. An academic was confused in understanding different terms that conveyed the same meaning in different questions. For example, domestic markets, which were meant to be the markets that an acquiring firm was based on, were used in a question. However, home markets, which shared the same meaning of the domestic markets, were used in another question. I made sure of coherence in the use of terms in all of the survey questions. Third, there was an issue of clarification of mergers and acquisitions. In a question in which respondents were asked to select the type of cross-border M&As that they had most recently participated in, I did not give a brief definition of the terms in spite of the reality where they were not much different each other from the practicing managers' perspective. Following the feedback, I gave each definition of mergers and acquisitions in the relevant question. Lastly, there was a concern about the emergence of common method variance (CMV), as all of the variables were measured by the information offered by a single informant (Chang et al., 2010). I argued that common method variance posed a little validity threat to this study as (a) its hypothesised model was so complicated that respondents were unlikely to estimate the relationships between independent and dependent variables (Chang et al., 2010), and (b) precautions were taken in line with good practice recommended by authors in the field (e.g., Spector & Brannick, 1995). The survey questions were designed according to the protocol reducing the possibility of CMV occurring. Consequently, the pilot study offered me an opportunity to revise and refine the survey questions and improve content validity. As a result, I was confident that the survey was correct, reliable, and valid so that the survey results produced would exhibit validity and reliability.

The final version of the survey was transformed into an online version and distributed to the senior-level managers of the sampling firms from June to December in 2015. The survey collection process started from sending a pre-notification in the form of a cover letter. After a week of this, I sent a survey invitation with a survey link and two subsequent reminders at two intervals of two weeks. As stated in the earlier section (Section 4.3.2), the pre-notification described the purposes and objectives of the research project, the criterion of the selection of the sampling frame and respondents, and an assurance on confidentiality and anonymity. At the end of the pre-notification, each respondent was promised a complimentary copy of the findings for participating as incentives and appreciated for their time and contribution. Likewise, the survey invitation and two reminders included all of this information but in a shorter version of the pre-notification. In particular, the reminders put much emphasis on those statements inspiring respondents' attention and participation such as the importance of

this study and its purpose and use, the importance of their responses for the success of this study, ensuring the confidentiality of their responses. All the templates of the pre-notification, survey invitation, and reminders are presented in Appendix 4.1. Thus, the data-collection process including the pilot study occurred between April and December in 2015.

4.8. Sample Description and Statistics

Out of the 593 sampling firms, I received total 143 responses which represented a response rate of 24.1%. This figure is comparable with previous literature on M&As that obtains survey responses from the executives of acquiring firms (Capron, 1999; Junni et al., 2015) and that in UK research setting (Ahammad & Glaister, 2013). For example, Capron (1999) and Junni et al. (2015) achieve a response rate of 15% and 17.5% respectively from a survey targeting the executives of an acquiring firm. Moreover, compared to the response rate of 11% in Ahammad and Glaister's (2013) studies that base their research site in the UK, the response rate of 24.1% is satisfactory by comparison.

The descriptive statistics of the respondents in terms of their position title are as follows: 56 respondents were chief executives or in similar senior positions such as CEOs, COOs, CIOs, (22.6%), 57 respondents, directors (11.3%), 8 respondents, vice presidents (5.5%), 9 respondents, (senior) managers (6.2%), 10 respondents, head (6.9%), and 3 respondents, others such as associates (1.3%). In terms of specialist expertise or discipline declared by the respondents, 43 respondents were in management (30%), 12 respondents, in strategy (8.3%), 23 respondents, in operations (16%), 10 respondents, in finance (6.9%), 7 respondents, in M&As (4.8), 21 respondents, in business development (14.6%), 5 respondents, in marketing (3.4%), 2 respondents, in investment (1.3%), 20 respondents, in others (13.9%) such as portfolio, performance and planning, global editor, technology, and product development. Moreover, I find that the respondents served in their acquiring firms from 1 year to 42 years. The average length of the respondents' firm tenure was 10.24 years. Table 4.12 describes the position titles and specialist experience of the respondents.

Table 4. 12 Description of Respondents

Department	Management	Strategy	Operations	Finance	M&A	Business Development	Marketing	Investment	Others	Total
Executives	28	1	19	4	0	0	0	2	2	56
Directors	13	5	4	4	2	15	4	0	10	57
Vice President	0	1	0	0	1	2	0	0	4	8
Managers	2	1	0	0	2	2	1	0	1	9
Head	0	3	0	2	2	2	0	0	1	10
Others	0	1	0	0	0	0	0	0	2	3
Total	43	12	23	10	7	21	5	2	20	143

When it comes to the description of the respondent firms (see Table 4.13), they varied in size from small firms having less than 50 employees to medium-sized firms with the number of employees between 51 and 250 to large firms having more than 251 employees. Based on the categorisation of firm size according to the number of employees, 17 (11.9%) of the respondent firms were small firms, and 37 (25.9%) of them were medium-sized firms. While small and medium-sized firms made up 37.8% of the respondent firms, large firms made up the largest portion at 60.1%. On average, the respondent firms had 5,692 employees. The minimal number of employees was 3, while the maximal number of employees was 95,455.

In order to present descriptive information about firm age of the respondent firms for illustrative purposes, I classify firm age according to four age classes at a five-year interval (Jain, 2016): 0-4 years; 5-9 years; 10-14 years; and more than 15 years. As shown in Table 4.13, a large number of the respondent firms were grown-up firms with their market presence for more than 15 years, while 9 respondent firms were start-ups and born in 2010s. The average age and mean of the respondent firms was 56 years old (the minimal age of the respondent firms was less than 1 year, while the maximal age of the respondent firms was 227 years), which indicates the respondent firms were largely well-established firms with some maturity.

When it comes to the capital structure of the respondent firms, 77 firms (53.8%) were publicly traded firms, while 62 firms (43.4%) were privately-held firms. Moreover, it is interesting to observe that 54 (37.8%) of the respondent firms had no previous M&A experience, while the remainder of the firms had ever purchased a firm. More specifically, 57 respondent firms (39.9%) were experienced with the purchases of less than 20 firms. 32 respondent firms (22.4%) were heavy acquirers purchasing more than 21 firms since they were established. Furthermore, I observe that the majority of the respondent firms purchased firms for the first time in 2010s. Specifically, 79 respondent firms (55.2%) made the first M&A deal in the 2010s, 33 ones (23.1%) in the 2000s, 21 ones (14.7%) in the 1990s, and 10 ones (7.1%) in the 1980s, as seen in Table 4.13.

Table 4. 13 Description of Respondent Firms

		Frequency	Percent
Firm Size by No of Employees	Small Firms	17	11.9
	Medium-Sized Firms	37	25.9
	Large Firms	86	60.1
	Missing	3	2.1
	Total	143	100
Age Category	0 - 4	9	6.3
	5 – 9	7	4.9
	14-10	18	12.6
	Older than 15 years	109	76.2
	Total	143	100
No of Previous M&A Experience	0	54	37.8
	Between 1 and 5	43	30.1
	Between 6 and 20	14	9.8
	Greater than 21	32	22.4
	Total	143	100
Year of 1st M&A Deal	1980s	10	7
	1990s	21	14.7
	2000s	33	23.1
	2010s	79	55.2
	Total	143	100
Capital Structure	Listed	77	53.8
	Unlisted	62	43.4
	Missing	4	2.8
	Total	143	100

Looking at the characteristics of the acquired firms acquired by the respondent firms in terms of firm size and location, I observe that most of the acquired firms were smaller than their acquiring firms. Specifically, M&As where an acquired firm's annual sales constituted less than 25% of its acquiring firm's comprise 72.4% of the sample. Moreover, only seven respondent firms completed M&As of a firm whose sales were greater than themselves. Moreover, looking at the geographical classification of the acquired firms, I find that 65 (45.5%) of the acquired firms purchased by the respondent firms were in EU, 44 (30.8%) of them, in North America, 12 (8.4%) of them, in Oceania, 11 (7.7%) of them, in Asia, 5 (3.5%) of them, in Africa, and 2 (1.4%) of them in South America. As described in Table 4.14, EU was the most popular, but South America was the least attractive, cross-border M&A destination for the UK respondent firms.

Table 4. 14 Description of Acquired Firms

		Frequency	Percent
Relative Proportion of Acquired Firms' Annual Sales to Acquiring Firms'	< 25%	104	72.7
	25% - 49%	20	14
	50% - 74%	7	4.9
	75% - 100%	3	2.1
	>100%	7	4.9
	Missing	2	1.4
	Total	143	100
Host Market Classification	Africa	5	3.5
	Asia	11	7.7
	EU	65	45.5
	North America	44	30.8
	Oceania	12	8.4
	South America	2	1.4
	Missing	4	2.8
	Total	143	100

To summarise, 143 responses out of the 593 firms represented a response rate of 24.1%. Chief executives and management were the most common job title and functional occupation held by the respondents. A large portion of the respondent firms was large firms with more than 250 employees, older than 15 years old, and inexperienced in terms of cross-border M&As. Finally, most of the acquired firms that the respondent firms recently purchased were relatively smaller than their acquiring firms and situated in EU or North America.

4.9. Data Analysis

The data analysis starts from the process of ensuring construct validity and reliability, where an examination is conducted to ascertain whether a measure of a concept really measures what it is supposed to measure and all of the multiple variables measure the same scale (Bryman, 2008). In order to assure the construct validity and reliability of the measures, I tested a hypothesised model using statistical modelling methods. This section discusses the data analysis techniques used for this study regarding their conceptualisation and the logics behind the use and choice of them.

4.9.1. Factor Analysis

Factor analysis is an analytic statistical tool for revealing underlying constructs that represent original variables in terms of how many constructs underlie the variables and the extent to which the constructs represent the variables (Bryman, 1988; Henson & Roberts, 2006; Worthington & Whittaker, 2006). Factor analysis is introduced as the first analytic technique to

establish construct validity, which is referred to as the extent to which a scale measures the concept that it is intended to measure (Bagozzi & Phillips, 1982). Lacks of construct validity are exposed to measurement errors caused by (1) construct underrepresentation, where the measured variables of interest specify too narrow factors so that the variables fail to cover important dimensions of the construct of interest, and (2) construct-irrelevant variance, where the measured variables of interest specify too broad factors so that the variables are too inclusive to load on a specific construct (Messick, 1995). The incorporation of irrelevant measured variables results in a distorted factor structure and complex solutions that are difficult to interpret (Fabrigar et al., 1999; Hayton et al., 2004). Therefore, construct validity lies at the heart of the implementation of factor analysis. The functions of factors analysis are best fulfilled when Exploratory Factor Analysis (EFA) assesses construct validity during the initial development of scales, and then Confirmatory Factor Analysis (CFA) confirms that the factor structure produced by EFA fits the data from a new sample (Worthington & Whittaker, 2006). Therefore, this study employs both of the factor analysis techniques.

4.9.1.1. Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is the most frequently used factor analytic technique for defining underlying dimensions of observed variables and reducing the number of them for effective subsequent statistical modelling (Hair et al., 2006). It assesses whether a set of observed variables clearly load on a single appropriate factor and whether the variables precisely represent the underlying factor (Conway & Huffcutt, 2003; Hinkin, 1995), by the correlation between the variables (Fabrigar et al., 1999; Hair et al., 2006). As a result, it provides researchers with information on the definition of structure among a set of variables for use in subsequent statistical modelling (Hair et al., 2006).

4.9.1.1.1. Sample Size Requirements for EFA

In order to conduct EFA, I justify the sample size of 143, based on the following discussion on sample size requirement. Traditional rules for appropriate sample size for EFA derive from absolute sample size for EFA ranging from 100 (Gorsuch, 1983) to 200 (Cattell, 1978). In spite of this easy-to-apply guideline, recent literature insists that the guideline is too simplistic and limited, taking into little consideration complex dynamics of factor analysis (Henson & Roberts, 2006).

Extending a Monte Carlo approach, which serves as a catalyst for the development of EFA, recent literature on EFA acknowledges the number of variables, the number of factors, and the factor loadings of variables as the most important determinants of factor recovery

(MacCallum et al., 1999; 2001; Preacher & MacCallum, 2002; Velicer & Fava, 1998; Winter et al., 2009), which is the interpretable results of EFA. Previous simulation studies on appropriate sample size for EFA provide evidence of compensatory relationships between communalities of variables, factor loadings, the number of variables, the number of factors, and sample size (MacCallum et al., 1999; 2001; Preacher & MacCallum, 2002; Velicer & Fava, 1998; Winter et al., 2009). For example, MacCallum et al. (1999), who are most cited by empirical literature improving the guidelines of appropriate sample size for EFA (MacCallum et al., 2001; Preacher & MacCallum, 2002; Winter et al., 2009), find that high levels of communalities between .6 and .8 are sufficient enough to offset deleterious effects of small sample size and the low ratio of the number of variables to the number of factors in achieving good factor recovery in a sample. In the case of wide communalities between .2 and .8, EFA can still achieve factor recovery if the number of variables per factor is large (i.e., at least three variables per factor). In the case of low communalities between .2 and .4, good factor recovery can be achieved with large sample size (i.e., at least 200) and a large ratio of variables to factors (i.e., at least three variables per factor).

Based on the results of previous literature (MacCallum et al., 1999; Velicer & Fava, 1998), I offer three overarching guidelines appropriate for the sample size of 143 for this study. Sample size ranged between 100 and 200 is likely to be sufficient if the data is well-conditioned with (1) high communalities between .6 and .8 and factor loadings above .8, (2) wide communalities between .2 and .8 and factor loadings above .6 with at least three or four variables per factor, or (3) low communalities between .2 and .4 and factor loadings above .4 with 6 to 7 variables per factor.

Based on the guidelines above, I argue that the sample size of 143 was sufficiently large enough to use EFA because its results met the guidelines suggested by previous literature (MacCallum et al., 1999; Velicer & Fava, 1998). The survey data that constituted 94 variables and 13 factors generally contains high and wide communalities with a variable to factor ratio of 3:1, which qualifies the second guidelines presented above. Detailed results of EFA are discussed in the result chapter (Chapter 5 Section 5.2.1).

4.9.1.1.2. Factor Extraction

Ensuring sample size requirements for EFA, researchers make the following decisions about what factor extraction model to use, what criteria to use for deciding on the number of factors to retain, and what type of rotation to use.

The second step in the factor analysis is to extract the number of factors that adequately account for correlations among measured variables. Factor extraction models are categorised into Common Factor Analysis (CommonFA) such as maximum likelihood and principal axis factoring, and component factor analysis, the most widely applied technique of which is Principal Component Analysis (PCA) (Conway & Huffcutt, 2003; Hinkin, 1995), so that I refer to component factor models as PCA hereafter.

CommonFA understands the structure of correlations among measured variables that share common variance with each other (Fabrigar et al., 1999; Ford et al., 1986; Hair et al., 2006). This analysis considers only common variance based on the assumptions that unique and error variances have little to do with a structure of variables (Fabrigar et al., 1999; Ford et al., 1986). In contrast, PCA creates an overall factor structure of measured variables that contain both common, unique, and error variances without distinction between them (Ford et al., 1986). Accordingly, CommonFA and PCA are used with different purposes. CommonFA aims to identify the latent dimensions of constructs of measured variables, while PCA aims to reduce some of ambiguities that are present in a preliminary analysis by eliminating poorly loading variables and reducing data sets (Fabrigar et al., 1999; Hair et al., 2006). In this regard, I selected PCA because I employed EFA to reduce a set of measured variables to a smaller and manageable set of variables. Alongside the choice of PCA, I used Kaiser's eigenvalues and varimax rotation, the former of which is the criteria for extracting number of factors, and the latter of which is rotation methods. I continue to discuss them in the following sections.

4.9.1.1.3. The Number of Factors to Extract

Following the choice of PCA, the third step in the factor analysis is to decide on the number of factors to extract. The most commonly used technique which should be used only with PCA is Kaiser's eigenvalues, which are referred to as the amount of variance explained by the factors extracted (Russell, 2002). Within PCA, Kaiser's eigenvalues simply compute eigenvalues from an unreduced or reduced sample correlation matrix and take only those factors whose eigenvalues exceed one (Fabrigar & Wegener, 2011). Along with the use of Kaiser's eigenvalues, I ensured the number of factors extracted by interpreting the percentage of total variance derived by the factors and confirmed that they explained at least a specified amount of variance. While there is no absolute threshold suggested for the field of social sciences, a solution that accounts for about 60% of the total variance is perceived as satisfactory (Hair et al., 2006).

4.9.1.1.4. Rotation

The factors extracted are rotated in dimensions or axes of space to arrive at a more interpretable solution (Conway & Huffcutt, 2003). Within a one-factor model, a unique solution is achieved by minimising the distance between observed and predicted correlation among variables. On the other hand, within a model with two or more than factors, there are an infinite number of solutions that all give the same minimum distance (Bartholomew et al., 2008). Thus, an emerging issue regarding factor rotation is how to select a single solution in which each factor is defined by a subset of variables with high loadings, which is referred to as the best 'simple structure' by Thurstone (1947) (Conway & Huffcutt, 2003; Fabrigar et al., 1999). There are broadly two types of rotations, one of which is based on the assumptions that the factors extracted are uncorrelated (i.e., orthogonal rotation), and the other of which is based on the assumption that the factors extracted are correlated (i.e., oblique rotation).

Orthogonal rotation, under which the extracted factors are rotated with the constraints that the factors maintain uncorrelated, is well-known for its simplicity, conceptual clarity, and amenability to subsequent analysis (Ford et al., 1986; Nunnally et al., 1978). These various advantages of orthogonal rotation lead it to be a preferred rotation technique, although the majority of EFA literature does not explicitly justify the chosen rotation strategy (Henson & Roberts, 2006). Among a verity of orthogonal rotation methods, varimax is the most popular one (Fabrigar et al., 1999; Henson & Roberts, 2006; Hinkin, 1995), as it produces reasonable simple structure in most situations (Floyd & Widaman, 1995).

In contrast to orthogonal rotation, oblique rotation relaxes the assumptions that the factors rotated are uncorrelated and allows orthogonality in some cases (Bartholomew et al., 2008). This flexible characteristic of the rotation methods attracts attention as a primary rotation method. However, this recommendation seems limited to EFA with large sample size as oblique rotation adds statistical complexity by producing factor pattern and factor structure matrices and therefore needs greater sophistication in interpretation (Ford et al., 1986). Therefore, orthogonal rotation, which has little to do with sample estimates of correlations between factors, may be a better choice when sample size is small. In contrast, oblique rotation is better used when sample size is large. While varimax is predominantly used in previous literature on EFA, promax, which initially conducts the varimax rotation and then relaxes the assumptions about the uncorrelated relations between factors, is a typical method when conducting oblique rotation (Russell, 2002). Taking into consideration the relative small number of the sample size collected for this study, I employed orthogonal and varimax and benefited from their outputs that required less sophistication in interpretation.

4.9.1.1.5. Summary of EFA

EFA, which determines the number of factors for itself, was employed to eliminate poorly loading variables and summarise many variables into fewer factors. A sample size for this study was perceived as appropriate for EFA as it achieved wide and high communality levels and contained at least three variables per factor. Ensuring that the 143 sample size met the basic requirements of appropriate sample size for EFA, I extracted the number of factors with eigenvalues greater than one and interpreted a cumulative percentage of total variance extracted by the factors. Then, I opted for orthogonal rotation because the rotation method which boasted of wide applicability and easy-to-interpret is most preferred by research that dealt with small sample size. Moreover, I opted for varimax with the assumption that the underlying factors are uncorrelated. Thus, my study with a relatively small sample size of 143 and the possibility of the factors being uncorrelated was likely to be well-fitted with the orthogonal rotation and varimax methods. Accordingly, I determined the number of factors to retain based on Kaiser's eigenvalues and rotated the factors via varimax within PCA and argue that EFA produces the factors that explain the most variance of the data set through the stability of a factor solution.

4.9.1.2. Confirmatory Factor Analysis

Although CFA performs the same role as EFA in assessing the quality of a measure by testing how well the variables of a measure represent its construct (Hair et al., 2006; Jackson et al., 2009), these two factor analytic techniques are significantly different in some respects. While researchers have no certainty of which variables represent which factors and how many factors exist among the variables, EFA itself testes the data and provides researchers such information (Hair et al., 2006). In contrast, CFA is conducted when researchers have preconceived thoughts on the structure of variables based on a pre-existing theoretical model and specify the number of factors and the loading patterns of each of the variables on their corresponding underlying factor (Curran et al., 1996; Hair et al., 2006). Accordingly, EFA provides researchers information on the number of factors that exist within a set of variables and which variables load on these factors. In contrast, CFA is used to validate the factor structure derived from the results of EFA tests.

4.9.1.2.1. Sample Size Requirements for CFA

Within CFA, the accuracy of a measure is determined by parameter estimates of factor loadings, factor variances, and uniqueness (or residual). Any model based on insufficient sample size lacks the accuracy of parameter estimates and results in the occurrence of non-convergent and improper solutions (Anderson & Gerbing, 1984), which are undesirable and

typical problems of estimation methods taking place within small sample size (Siemsen & Bollen, 2007). Non-convergent solutions occur when parameter-estimation methods fail to converge to a proper solution after reaching a value that meets criteria within a certain number of iterations. Moreover, improper solutions occur when sampling fluctuations are too wide to estimate parameter value within an interpretable boundary (Anderson & Gerbing, 1984; Velicer & Fava, 1998). However, data from appropriate sample size can more precisely estimate a model's parameters and yield converged and proper sample solutions that reduce the size of standard errors of parameter estimates and produce interpretable estimates (MacCallum et al., 1999; Nasser & Wisenbaker, 2003; Siemsen & Bollen, 2007; Velicer & Fava, 1998).

Though a great deal of previous studies on CFA agree that model parameters are better estimated with large sample size (Anderson & Gerbing, 1984; MacCallum et al., 1999), an emerging issue here is how large 'large' is. In spite of considerable debates regarding the estimates of appropriate sample size to achieve a reasonable level of statistical accuracy of parameter estimates (Anderson & Gerbing, 1984; MacCallum et al., 1999; Schreiber et al., 2006), they reach little consensus about it. Meanwhile, the relevant debates are generally consistent within three categories: a ratio of observations to parameters (Schreiber et al., 2006), model characteristics (Ding et al., 1995), and model fit such as chi-squared test (Marsh et al., 1998). The third category is developed to strengthen the justification for appropriate sample size that is determined by the first two (Chin, 1998).

Based on the model-specific standards for appropriate sample size for CFA, previous studies suggest minimum sample size required to conduct CFA ranging from 100 to 200 to 300 to more than 300 (Anderson & Gerbing, 1984; Boomsma, 1985; Ding et al., 1995; Marsh et al., 1998), where less than 100 is considered too small to judge the statistical adequacy of a model. A medium level of sample size of 100 may be acceptable in the case of three or more variables per factor. Greater than 200 may be an appropriate minimum sample size regardless of the number of variables per factor. Greater than 300 is considered large enough even for a complex research model.

Although this rule is indiscriminately applied across all situations, it is considered too rough and integrative to determine appropriate sample size for CFA. Alternatively, some studies identify an observations-to-parameter ratio as a standard for appropriate sample size for CFA (Schreiber et al., 2006), emphasising 5 observations (Bentler, 1989), 10 observations (Bentler & Chou, 1987), and 20 observations (Jackson, 2003), per parameter estimated based

on the assumptions that a larger model is difficult to estimate (Marsh et al., 1998). Moreover, some studies argue that sample size is dependent on model characteristics such as a ratio of the number of variables to the number of factors, factor loadings, and factor correlations (Anderson & Gerbing, 1984; Boomsma, 1985; Ding et al., 1995; Marsh et al., 1998). Among the variety of these model characteristics, the most widely discussed and highlighted one is the number of variables per factor (Anderson & Gerbing, 1984; Ding et al., 1995; Marsh et al., 1998). Previous literature provides evidence of the compensatory and interactive relationship between sample size and the number of variables per factor (Anderson & Gerbing, 1984; Boomsma, 1985; Marsh et al., 1998). The large number of variables per factor (i.e., at least 3) can compensate for small sample size (i.e., at least 100) and the converse is also true, although large sample size and large indicators are the most desirable (Anderson & Gerbing, 1984; Boomsma, 1985; Marsh et al., 1998).

While these first and second rules are model specific, the third rule of appropriate sample size is often viewed as superior to the first and second ones as it concentrates on the behaviour of CFA solutions itself. A given sample size is perceived as appropriate when the sample size has an adequate level of statistical power to detect or reject a poor model, known as power analysis (MacCallum et al., 1996). The most widely used approach to assess the power for testing hypotheses in CFA is chi-square statistic. Chi-square statistic is originally developed to serve as a guide to model evaluation and selection (Hu & Bentler, 1998), measuring the discrepancy between observed sample covariance and reproduced covariance under a model (Bartholomew et al., 2008; Brannick, 1995). In its basic form, a reasonable good fit of data produces a significant value of chi-square, whereas a poor fit of data produces an insignificant value of chi-square. However, chi-square statistic is known to be overly sensitivity to sample size (Bentler & Bonett, 1980), where large samples tend to result in an insignificant chi-square even though the discrepancy between observed and reproduced covariance matrices is small enough to be ignored (Brannick, 1995). Thus, small samples tend to fail to reject models purely because of lacks of evidence (Bartholomew et al., 2008; Brannick, 1995). Alternatively, various statistical tests such as Comparative Fit Index (CFI) (Bentler, 1990), Non-Normed Fit Index (NNFI) (Bentler & Bonett, 1980), and Root Mean Square Error of Approximation (RMSEA) (MacCallum et al., 1996) emerge as supplementary (or independent in the case of RMSEA) power analysis for model fit. Therefore, many empirical studies use chi-square statistic not independently but with CFI (Dyer et al., 2005), NNFI (Reise et al., 1993), and RMSEA (Doll et al., 1994; Dyer et al., 2005; Reise et al., 1993). I will further discuss the power analysis in Section 4.9.1.2.2.

While there is no definitive rule for appropriate sample size for CFA, the questions of appropriate sample size in general depend on parameter estimates (i.e., the ratio of 5 observations to parameter estimated), model characteristics (i.e., number of indicators per factor), and power analysis (i.e., chi-square statistic, CFI, NNFI, and RMSEA). Based on the first sample-size rule, the 143 sample size for this study may be viewed as not sufficient enough to employ CFA. However, I argue that the sample size is appropriate for CFA because it met the second and third sample-size rules. Each factor constituted at least three variables, which can compensate the deleterious effects of small sample size (Anderson & Gerbing, 1984; Boomsma, 1985; Ding et al., 1995; Marsh et al., 1998). Of significance, the results of the four goodness-of-fit tests - the ratio of chi-square to degrees of freedom (χ^2/df), CFI, NNFI, and RMSEA - met recommended cutoffs for the ratio of chi-square to degrees of freedom ($2 \leq \chi^2/df \leq 5$) (Marsh & Hocevar, 1983) CFI ($\geq .90$) (Marsh & Hau, 1996), NNFI ($\geq .90$) (Marsh & Hau, 1996), and RMSEA ($\leq .10$) (Browne & Cudeck, 1992), the results of which are presented in the result chapter (Chapter 5, Section 5.2.2). Thus, the 143 sample size met the requirements for appropriate sample size for CFA, achieving a reasonable level of statistical power to detect model fit. As a consequence, the sample data was tested on CFA, divided into two subsets of the variables (Morgan et al., 2004).

4.9.1.2.2. Assessment of Model Fit

A test of if there is a good fit of a model is determined by estimation methods and goodness of fit indices indicating how small and large differences between the observed variances and covariance among variables independent of the model and the observed variances and covariance among the variables directed by the model are (Tomarken & Waller, 2003). A good-fitting model is identified when differences between the observed variances and covariance of sample data and the observed variances and covariance drawn from a model are minimised. However, a poor-fitting model is identified when differences between the observed variances and covariance of sample data and those of the model are large.

Fit indices are sensitive to estimation methods. Therefore, the choice of an appropriate estimation method is of significance. CFA tests a factor structure that is used to represent variables by three typical estimation methods: Maximum Likelihood (ML), Generalised Least Squares (GLS), and Partial Least Squares (PLS), the first two of which are covariance-based estimation method used for model fit, assuming that observed variables are a continuous scale and normally distributed, and the third of which is a component-based estimation methods used for application and prediction (Anderson & Gerbing, 1988). Therefore, when the

objectives of adopting ML and GLS and their assumptions are violated, PLS is alternatively preferred. This study whose variables were linear functions of continuous factors sought to confirm the factor structure with a more robust analysis of the variables rather than prediction (Reinartz et al., 2009). Thus, this study employed covariance-based estimation methods and ML because it provided better outcomes (Ding et al., 1995).

Though chi-square is recognised as the most widely used inferential statistic detecting model fit, the use of chi-square alone is often seen as problematic because of its overreaction to sample size. Accordingly, many alternative fit indices that are less affected by sample size than chi-square are suggested (Tomarken & Waller, 2003). The use of fit indices that represent different measurement properties is recommended. Consistent with the suggestion and recommendation, this study includes four fit indices, two of which (i.e., a ratio of chi-square to the degrees of freedom (χ^2/df) and RMSEA (Steiger & Lind, 1980)) are classified as absolute fit indices, and the other two of which (i.e., CFI (Bentler, 1990) and NNFI (Bentler & Bonett, 1980)), as incremental indices.

Absolute fit indices, which directly assess how well a model reproduces sample data (Hu & Bentler, 1998; Weston & Gore, 2006), are used to evaluate an individual model and serve as stand-alone fit indices (Ding et al., 1995; Doll et al., 1994). In addition to chi-square, the most widely employed absolute fit indices are the ratio of chi-square to degrees of freedom and RMSEA.

Degrees of freedom can supplement a weakness that lies at reliance on chi-square statistic alone by correcting sample size (Doll et al., 1994; Shah & Goldstein, 2006). The ratio of chi-square statistic to its corresponding degrees of freedom indicates the relative efficiency of a model and determines if it is determined whether to accept or not. A recommended value of the ratio is between 2 and 5 (Marsh & Hocevar, 1983). The chi-square statistic is reported with its corresponding degrees of freedom.

RMSEA, which assesses “badness of fit of a model per degree of freedom in the model” (Reise et al., 1993, p. 554), is the only fit index that is little influenced by model complexity meanwhile comparing point estimates of RMSEA with their related confidence intervals (Chen et al., 2008; Cheung & Rensvold, 2002; Edwards, 2001; Kelley & Lai, 2011). Accordingly, RMSEA is another most popular fit index, following chi-square-based fit indices (Jackson et al., 2009). A RMSEA value of .0 indicates a perfect fit of a model and its value up to .10 indicates acceptable fit (Browne & Cudeck, 1992).

Incremental fit indices are used as a test of not the absolute fit of a model but its fit relative to a null model (Schaufeli & van Dierendonck, 1993). They compare the improvement of a fit of a model over a null model in which all variables are independent and there is no path between constructs (i.e., NNFI) and over an ideal model in which a model is perfectly fitted into sample data (i.e., CFI) (Widaman & Thompson, 2003). Among a variety of incremental fit indices, this study selects CFI and NNFI, as they are widely used in previous literature (Dyer et al., 2005; Belizon et al., 2013; Koufteros, 1999; Hughes et al., 2007). These fit indices can be calculated as follows:

Table 4. 15 Definition, Reference, Direction, and Cutoff Criterion for Incremental Indices

Fit Indices	Algebraic definition	Reference	Direction	Cutoff Criterion (Browne & Cudeck, 1992; Marsh & Hau, 1996; Marsh & Hocevar, 1983)
Ratio of Chi-Square to Degrees of Freedom	χ^2/df	Bollen (1989)	Small is good	The ratio of chi-square to degrees of freedom ranged between 2 and 5
CFI	$\frac{1}{\frac{\max[(x_h^2 - df_h, 0)]}{\max[(x_h^2 - df_h), (x_0^2 - df_0), 0]}}$	Bentler (1990)	Large is good	.90
NNFI	$\frac{[(x_0^2/df_0) - (x_h^2/df_h)]}{(x_0^2/df_0 - 1)}$	Tucker & Lewis (1973)	Large is good	.90
RMSEA	$\sqrt{\max(d_h/df_h, 0)}$	Steiger & Lind (1980)	Small is good	.10

4.9.1.2.3. Convergent Validity and Discriminant Validity

Convergent validity appears to exist when items correlate with each other and their parent construct (Messick, 1995; Midgley et al., 1998). Discriminant validity appears to exist when a construct is distinct from other constructs (Messick, 1995; Midgley et al., 1998). In other words, when items share a high proportion of variance, convergent validity is established (Hair et al., 2006). Moreover, when the variance that items share within their corresponding construct is higher than any variance that construct shares with other constructs (Koufteros, 1999), discriminant validity is established. These are assessed by construct validity, Average Variance Extracted (AVE) for each construct, the comparison of AVE with squared correlations between constructs (Koufteros, 1999). These components of construct validity are assessed in EFA (Midgley et al., 1998; Spreitzer, 1995).

4.9.1.2.4. Summary of CFA

CFA, which is conducted based on researchers' preconceived model, was employed to confirm construct validity. Prior to the implementation of CFA, it was important to make sure that the sample size of 143 met the minimum sample size for CFA, as it required relatively larger sample size than EFA (Shah & Goldstein, 2006). The sample size of 143 for this study satisfied the requirement of minimum sample size for CFA, constituting at least three variables per factor and achieving adequate statistical power of the models based on the cutoffs of power analysis such as $2 \leq \chi^2/df \leq 5$, CFI ($\geq .90$), NNFI ($\geq .90$), and RMSEA ($\leq .10$).

CFA primarily assesses a model fit under an ML estimation method. Standing on the assumption that observed variables are on a continuous scale, ML is an effective means of detecting model fit, producing better results than GLS, its comparative estimation method. Adopting the ML estimation method, this study carried out four fit tests assessing both absolute fit of a factor structure via χ^2/df and RMSEA and the fit of the factor structure relative to a null model via CFI and NNFI. Finally, CFA tested convergent and discriminant validity by interpreting the results of the t-value of the loadings of observed variables on their respective factors and comparing AVE with squared correlations between constructs.

4.9.2. Reliability Test

In line with the establishment of construct validity of variables through EFA and CFA, their reliability should be assured at the same time. Reliability, which is referred to as the consistency of a measure of a concept, is identified when respondents' scores on any variable tend to be consistent with their scores on the other variables and assure that all of the variables of a measure are related to each other (Bryman, 2008). In other words, if respondents score inconsistently on the variables of a measure, it actually measures different things and cannot produce a valid measure. Therefore, the validity and reliability of a measure go together and the terms 'reliability' and 'validity' seem to be almost synonymous (Bryman, 2008). In this regard, creating and refining a measure's scales that sustain reliability is another important task for those researchers who rely on a survey as a primary source of data collection (Hinkin, 1998; Schoenfeldt, 1984).

I used Cronbach's alpha (α) statistic as it is the most commonly used measure assessing the internal consistency of observed items and increasing the reliability of a measure by eliminating those items that deteriorated inter-correlation and reliability (Black, 1999; Kopalle & Lehmann, 1997). The Cronbach's alpha is expressed as a number between 0 and 1, and alpha

value above .70 is an acceptable reliability coefficient (Hair et al., 2006). I achieved alpha values regarding the sample size of 143, computing the following equation. The results of the reliability test are presented in Section 5.2 in Chapter 5.

$$\alpha = \frac{n}{(n - 1)} \left(1 - \frac{V_i}{V_{test}} \right)$$

Where:

n is the number of variables

V_i is variances of scores on each variable

V_{test} is total variance of overall scores on the entire test

4.9.3. Non-Response Bias

Along with recent trends towards significant decreases in survey response rates, non-response bias can occur where the data provided by those who respond to surveys may be quite different from the data that would be provided by those who do not respond to them (Bryman, 2008; Groebner et al., 2008). Therefore, researchers should make sure that survey respondents are similar to non-respondents by comparing between these groups (Berenson et al., 2012).

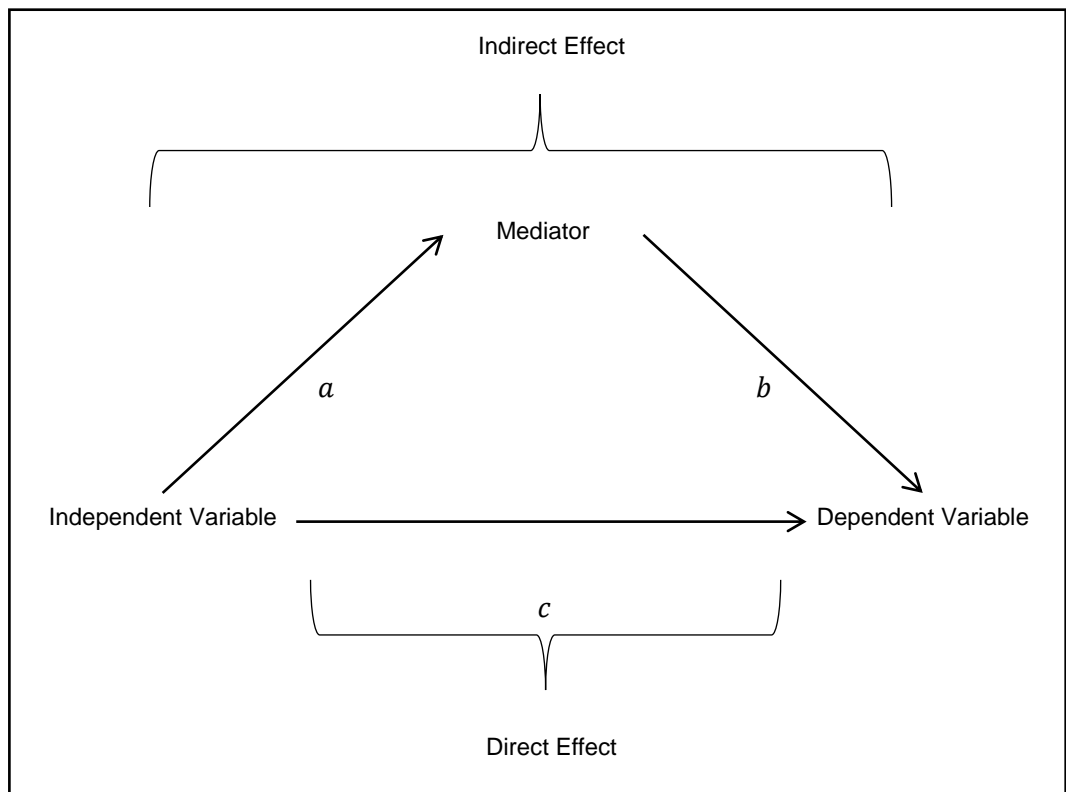
According to Salant and Dillman (1994), if survey data is collected under the following two conditions, it may expose to non-response bias: (1) more than a small number of people who are selected in a sample are not reached or refuse to participate; and (2) non-respondents are different from the respondents in a way that is important to a study. As the respondents and non-respondents in the survey for this study were drawn from the same sample-selection criteria, the data set was not concerned with the second condition. However, when it came to the first condition, it was true that a large portion of decreases from a starting sample of the 1,022 acquiring firms to the survey distribution list of the 593 acquiring firms were attributed to uncontactable and unapproachable potential respondents. The survey data met one of the conditions of the possibility of having non-response bias, though Salant and Dillman warn the occurrence of non-response bias when the two conditions hold true at the same time. As caution must be applied, I assured that the survey data was free from the danger of non-response bias by comparing those who responded with those who did not. The results of non-response bias are addressed in the result chapter (Chapter 5, Section 5.1).

4.9.4. Mediation

This study employed Hayes' (2012) PROCESS macro for regression (or SPSS multiple mediation with bootstrapping) to detect: (1) the mediating effects of exploitation and exploration innovation on the relationships between structural integration and autonomy and M&A and NPD performance; and (2) the mediating effects of knowledge transfer and knowledge sharing on the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

Mediation refers to the situation where an independent variable predicts a dependent variable through a third variable (or a mediating variable) (Field, 2013). That is, the relationship between an independent variable and a dependent variable is explained in the following ways: (1) an independent variable predicts a mediator through the path denoted by a ; and (2) the mediator predicts a dependent variable through the path denoted by b , as shown in Figure 4.2 below. Therefore, a mediating effect in the relationship between an independent variable and a dependent variable is detected when the relationships between the independent variable and a mediating variable and between the mediating variable and the dependent variable reduce the relationship between the independent variable and the dependent variable. In methodological terms, a direct effect is the relationship between an independent variable and a dependent variable in simple regression, while an indirect effect (i.e., a mediation effect) is the combined effect of the relationships between an independent variable and a mediating variable and between the mediating variable and a dependent variable.

Figure 4. 2 Mediated Relationships



(Source: Field, A. 2013. *Discovering Statistics Using IBM SPSS Statistics* (4th ed.). London: SAGE Publications Ltd.)

One of the most widely applied mediation measure is kappa-squared (k^2) (Preacher & Kelley, 2011), which measures the standardised size of indirect effects by a ratio of observed indirect effects (ab) to the maximum possible value of the indirect effects ($\max(ab)$).

$$k^2 = \frac{ab}{\max(ab)}$$

k^2 has bounds of 0 (no linear indirect effect) to 1 (indirect effect is as large as it potentially could be) (Preacher & Kelley, 2011), which indicates the proportion of variance explained by an indirect effect. That is, a mediation model with k^2 above .25 has a large effect, k^2 around .09 has a medium effect, and k^2 with .01 has a small effect.

In addition to the measure of the indirect effect size by k^2 , a statistical model for mediation is evaluated on a Sobel test (Z) (Sobel, 1982). If the Sobel test shows a significant indirect effect of a mediating variable, it means that an independent variable significantly affects a dependent variable via the mediating variable. The formula of the Sobel test is as follows.

$$\sqrt{b^2s_a^2 + a^2s_b^2 + s_a^2s_b^2}$$

Where

a is the path from the independent variable to the mediator

b is the path from the independent variable to the mediator

s_a and s_b , are the standard error of a and b respectively

Computing all of effect size measures including kappa-squared (k^2) and Sobel's significance test (Z), the PROCESS macro is an effective programme of mediation. In particular, the PROCESS macro, which tests mediation with bootstrap samples repeatedly estimating indirect effects in each resampled data (Preacher & Hayes, 2008), allows a mediation model to gain greater statistical power while reducing the likelihood of errors (Michel et al., 2016). Therefore, the PROCESS macro produces biased-corrected confidence intervals for the significance of indirect effects. This study tested the mediating effects of exploitation and exploration innovation and knowledge transfer and knowledge sharing, measuring effect size k^2 and its significance by the Sobel test with 2,000 bootstrap samples.

Initially, I predict that there are no direct effects of structural integration and autonomy on M&A and NPD performance. In order to provide evidence on this argument, I test them, using multiple regression analysis. Appendix 4.3 provides detailed explanations about how to use multiple regression analysis and interpret its results.

4.9.5. Summary of Data Analysis

In this section, I provide detailed discussion from the conceptualization of the statistical techniques applied in this study to the justification for the adoption of them. EFA is used to determine the number of factors among variables, while CFA forces researchers to explicitly indicate which variables load on which latent factor (Landis, 2013). Thus, CFA is viewed as a more rigorous and precise test of constructs compared to EFA. Much existing literature initially conducts EFA to generate underlying factors and eliminates poorly loading factors (Morgan et al., 2004). Then, the data sets are applied to CFA to verify the factor structure of the model derived from the results of the EFA test (Morgan et al., 2004). Thus, I initially reduced a large set of variables to a smaller set of underlying variables through EFA and confirmed the constructs found by then conducting CFA.

A Cronbach's alpha test ensures the internal consistency of a measure wherein all individual variables of the measure measure the same construct and thus exhibit high inter-

correlation and reliability. The achievement of internal consistency goes together with the establishment of construct validity. Thus, Cronbach's alpha test is often conducted along with factor analysis. Eliminating variables that poorly loaded on their corresponding factor, I confirmed the internal consistency of a measure through the Cronbach's alpha test.

Third, I detected non-response bias for fear that the survey responses collected might be different from the responses that would be provided by non-respondents. My survey data is likely to be free from the concerns about the occurrence of the bias because I applied the same sample criterion over the whole sampling frame. However, decreases in the course of establishing sample size could expose to the risk of non-response bias. Thus, I tested non-response bias and confirmed that there was no non-response bias by comparing 20 respondents with 20 non-respondents regarding their firm size, net income, and annual sales.

Fourth, I tested the direct relationships between structural integration and autonomy and M&A and NPD performance, using multiple regression analysis (Appendix 4.3 provides detailed information about the mechanisms of multiple regression analysis). Applying multiple regression analysis to the relationships between structural integration and autonomy and M&A and NPD performance, this study provides evidence on if there are the direct effects of the independent variables on the dependent variables. The results of multiple regression analysis are followed in Chapter 5, Section 5.3.1.

Finally, I employed the PROCESS macro computing the kappa-squared for the indirect effects of mediating mechanisms to see their effect size and conducting Sobel tests with bootstrap confidence intervals to determine whether the mechanisms were significant or not. Accordingly, the PROCESS macro was used to test the mediating effects of exploitation and exploration innovation and knowledge transfer and knowledge sharing based on 2,000 bootstrapping resamples.

4.10. Conclusion of Methodology Chapter

This chapter dealt with the issues of research methodology and research method adopted in this study in terms of the justification for the design and development of the chosen research methodology and method and the procedure of data collection and analysis. I summarise these issues in this section and conclude this chapter at the same time.

Among three different schools of thought in social research drawing from different ontological, epistemological, and methodological assumptions, this study adopted realist ontology, within which reality is waiting to be discovered, empiricist epistemology, within

which knowledge is acquired from surveys and empirical data, and quantitative methodology, by which hypotheses derived from general theories are tested on numerical forms of data on individual perceptions of facts, values, and behaviour (Bryman, 1988). This set of the philosophical assumptions is understood as positivism paradigm, and I structure this study within the positivism paradigm. Under the positivism paradigm, this study subscribes to the principles of natural science and the development of objective knowledge through a survey. Conducting statistical analysis in measuring the relationship between cause and effect, this study generalises findings to global trends towards cross-border M&As beyond the representative sample.

Along with the choice of a survey method, I constructed and designed a survey and survey questions in the following ways and for the following reasons. I formed a self-completion survey that was sent to as an email linked to an electronic version of the survey to potential respondents. That is, respondents were left alone while completing the electronic form of survey, for the sake of the efficiency and effectiveness of time and costs. Further, I decided to collect data at a single point in time, which is understood as a cross-sectional survey, to observe variation in variables among multiple cases and to identify the causal relationships between variables rather than to examine changes in the relationships between them according to the elapse of time. When it came to the development of the survey questions, a closed-question format was used to measure variables in this study using seven-point Likert-scales. I used this closed-question format owing to its easy and quick ways in which respondents answered for a number of survey questions by just clicking on a circle.

A number of steps were taken to ensure the quality of survey data. First, the survey questions avoided confusing respondents by specifically asking about their recent cross-border M&A and clearly designating an acquiring firm independent of its acquired firm or combined with the acquired firm. Second, the number of the survey questions were shortened to attract respondents' attention and to increase response rates. The final version of the survey constituted 20 questions in 7 pages, which would require about 10 minutes to complete them. Third, the survey questions were well-structured, beginning the questions of information from cross-border M&As such as the types of the M&A event of interest to the characteristics of the respondent firm and its acquired firm such as firm size. In the body part, the questions of post-acquisition structure, post-acquisition conduct and M&A and NPD performance were laid out. In the end, the respondents were asked about their competency to answer the survey questions.

The survey was well-constructed with a cover letter, in which respondents were informed of as much information on this study such as its purposes, sample selection criterion, significance of their participation, incentives for their responses, the estimated time to get the surveys done, and the assurance of confidentiality of their data and privacy as possible. Accordingly, the survey with the informative cover letter was pretested by seven academics and sent to the sampling firms that were comprised of 593 UK acquiring firms that had purchased a non-UK firm between January 2012 and July 2015. I collected data from the sampling firms between June and December 2015 by sending a pre-notification a week before sending out a survey link followed by two subsequent reminders at two intervals of two weeks. As a result, I received a total of 143 responses representing a response rate of 24.1%.

As preparation for statistical modelling, I applied: (1) EFA to discover a structure of latent factors underlying data set; (2) CFA to conduct a more rigorous test of the factor structure produced by EFA and to test convergent validity and discriminant validity; (3) Cronbach's alpha to assess the internal consistency of the variables of measures; and (4) non-response bias to see if the sample was representative of its population by some unfortunate chance. Along with the assessment of the data set regarding its reliability and validity, I used multiple regression analysis, which detected the direct relationships between independent variables and dependent variables. Moreover, the PROCESS macro was employed in this study to examine the indirect effect size of mediating models by kappa-squared (K^2) and their significance by the Sobel test (Z). In this study, multiple regression analysis tested the direct relationships between the independent variables of structural integration and autonomy and the dependent variables of M&A and NPD performance. The PROCESS macro tested (1) the mediating effects of exploitation and exploration innovation on the relationships between structural integration and autonomy and M&A and NPD performance and (2) the mediating effects of knowledge transfer and knowledge sharing on the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

Chapter 5: Research Results

5. Results

In this chapter, I present the results of a hypothesised model including the accuracy of the statistical data, the validity and reliability of measures, and the statistical modelling of the hypotheses constructed for this study.

5.1. Non-Response Bias

Analysis begins by verifying the integrity of the data. Following the works of authors such as Morgan, Vorhies, and Mason (2009), Hughes, Hughes, and Morgan (2010), and Kyriakopoulos, Hughes, and Hughes (2016), non-response bias was examined by comparing a random sample of respondents with a random sample of non-respondents and comparing them based on objective criteria. I randomly selected 20 respondents to compare with 20 non-respondents and find that there are no significant differences between these respondents and non-respondents regarding sales ($p \geq .10$), net income ($p \geq .10$), and firm size ($p \geq .10$), as shown in Table 5.1. Therefore, it is appropriate to conclude that the data does not suffer from non-response bias.

Table 5. 1 Results of Non-Response Bias

		Sum of Squares	df	Mean Square	F	Sig (1-tailed)
Sales	Between Groups	396199.1	1	396199.1	.07	.80
	Within Groups	223559559	38	5883146.3		
	Total	223955758	39			
Net Income	Between Groups	136686.5	1	136686.5	1.55	.22
	Within Groups	3347893.3	38	88102.5		
	Total	3484579.8	39			
No of Employees	Between Groups	183929477	1	183929477	.34	.57
	Within Groups	20777689606.7	38	546781305		
	Total	20961619083.6	39			

5.2. Validity and Reliability Tests

I conducted Exploratory Factor Analysis (EFA) and Cronbach's alpha tests to assess the measurement items used in the survey and determined whether they created reliable and appropriate variables. During this process, it was necessary to eliminate the measures that possessed poor factor loadings and confirm the construct validity of the factor structure produced by EFA in Confirmatory Factor Analysis (CFA). In this section, I address the results of the EFA, Cronbach's alpha, and CFA tests of the two interdependent variables of structural integration and autonomy, five mediators of exploitation and exploration innovation,

knowledge transfer from/to an acquired firm, and knowledge sharing, and two dependent variables of M&A and NPD performance; four control variables of outcome control, shared goals, micro-environmental factors, and macro-environmental factors.

5.2.1. EFA Results

Taking into account the sample size of 143, I applied Principal Components Analysis (PCA) with varimax rotation and established the validity and reliability of the data sets by including those items whose dominant loadings were greater than .50 and cross-loadings were not substantial (Briggs & Cheek, 1988). Based on the cut-offs, I eliminated those items which poorly loaded on their corresponding factors or that loaded on two or more factors. Then, I repeatedly ran the items in this EFA until it produced wide communalities ranged between .20 and .80 with factor loadings above .60 (MacCallum et al., 1999; Velicer & Fava, 1998) and solutions that met the cut-off criterion of 60% of the total variance and a reliability index above .70 simultaneously (Hair et al., 2006). Therefore, the EFA results of the solutions are presented in the following sections and these form the basis for subsequent CFA tests.

5.2.1.1. EFA Results of Structural Integration and Autonomy

EFA finds a two-factor structure with eigenvalues of 4.76 and 2.10, with all remaining eigenvalues less than 1. Inspection of the cumulative percentage of the total variance explained by the factors (68.56%) lends support to the two-factor solution obtained. The rotated factors (Table 5.2) are all significant with high factor loadings ranging between .74 and .88 for Factor 1 ($\alpha = .89$) and between .71 and .87 for Factor 2 ($\alpha = .88$) (Velicer & Fava, 1998), showing wide levels of communalities between .56 and .80 and between .53 and .79, respectively (MacCallum et al., 1999). Both structural integration ($\alpha = .89$) and autonomy ($\alpha = .88$) show high reliability when examined with Cronbach alpha, which suggests that the items for both constructs show significant internal consistency and integrity (Hair et al., 2006).

Table 5. 2 EFA Results of Structural Integration and Autonomy

		1	2	Communalities
Structural Integration	Market decisions	.79		.66
	Operating Decisions	.88		.80
	Human Resource Management	.83		.70
	R&D Activities	.82		.73
	Strategy Formulation	.74		.56
Autonomy	Market decisions		.84	.77
	Operating Decisions		.87	.79
	Human Resource Management		.71	.53
	R&D Activities		.82	.71
	Strategy Formulation		.78	.62
	Cronbach's Alpha	.89	.88	
	Eigenvalues	4.76	2.10	
	Cumulative Percentage of Total Variance	34.46	68.56	

5.2.1.2. EFA Results of Exploitation and Exploration Innovation

EFA presents two factors having eigenvalues of 3.65 and 1.65, each of which explains 42.26% and 33.43% of the variance in the items and thereby a total of 75.69% of the variance. The items of the first factor load between .68 and .91 ($\alpha = .85$) and those items of the second factor load above .80 ($\alpha = .88$), achieving wide communalities between .50 and .85 and high communalities between .73 and .83, respectively (MacCallum et al., 1999). See Table 5.3. The measurement items load onto the expected constructs and exhibit high reliability values and so it is appropriate to take these forward for CFA.

Table 5. 3 EFA Results of Exploitation and Exploration Innovation

		1	2	Communalities
Exploitation Innovation	We frequently refine existing products and services.	.88		.79
	We regularly implement small adaptations to existing products and services.	.91		.85
	We introduce improvements to existing products and services for our market.	.90		.84
	We increase economies of scale in existing markets.	.68		.50
Exploration Innovation	We invent new products and services.		.85	.76
	We experiment with new products and services in our market.		.89	.83
	We commercialise products and services that are completely new to the firm.		.84	.73
	Cronbach's Alpha	.85	.88	
	Eigenvalues	3.65	1.65	
	Cumulative Percentage of Total Variance	42.26	75.69	

5.2.1.3. EFA Results of Knowledge Transfer and Knowledge Sharing

EFA produces three underlying factors that are extracted with eigenvalues of 5.86, 2.04, and 1.58. The three factors explain a total of 67.71% of the total variance (Table 5.4). In addition, all of the items for Factor 1 have factor loadings at .80 and above ($\alpha = .93$) (Velicer & Fava, 1998), yielding high communalities above .70 (MacCallum et al., 1999). The items for Factors 2 and 3 range between .69 and .82 ($\alpha = .79$) and between .52 and .91 ($\alpha = .76$), achieving wide communalities between .49 and .74 and between .38 and .85, respectively (MacCallum et al., 1999). It is therefore deemed that the three-factor solutions are most appropriate for the data.

Table 5. 4 EFA Results of Knowledge Transfer and Knowledge Sharing

		1	2	3	Communalities
Knowledge Transfer From Acquired Firms	Use of the target firm's innovation capabilities		.74		.61
	Use of the target firm's know-how in processes		.82		.74
	Use of the target firm's sales networks		.69		.49
	Use of the target firm's managerial capabilities (reporting, planning, tools, financial expertise)		.79		.65
Knowledge Transfer To Acquired Firms	Transfer of innovation capabilities to the target firm			.91	.85
	Transfer of know-how to the target firm			.84	.76
	Integration of products from the target firm into our firm's sales networks			.52	.38
	Transfer of managerial capabilities to the target firm			.61	.51
Knowledge Sharing	Employees see benefits from exchanging and combining ideas with one another.	.84			.75
	Employees believe that by exchanging and combining ideas they can move new projects or initiatives forward more quickly than by working alone.	.85			.78
	Employees are proficient at combining and exchanging ideas to solve problems or create opportunities.	.80			.72
	Employees do a good job of sharing their individual ideas.	.82			.73
	Employees are capable of sharing their expertise to bring new projects or initiatives to fruition.	.85			.78
	Employees are willing to exchange and combine ideas with their co-workers.	.84			.74
	Cronbach's Alpha	.93	.79	.76	
	Eigenvalues	5.86	2.04	1.58	
	Cumulative Percentage of Total Variance	32.01	50.41	67.71	

5.2.1.4. EFA Results of M&A Performance and NPD Performance

EFA produces a two-factor structure with eigenvalues of 8.06 and 2.28 explaining total 79.50% of the variance, estimating high factor loadings of the items for Factor 1 between .79 and .86 ($\alpha = .95$) and for Factor 2 between .88 and .90 ($\alpha = .96$) (Velicer & Fava, 1998). Moreover, the factor solutions achieve high communalities between .66 and .83 and between .82 and .89 respectively (MacCallum et al., 1999), as seen in Table 5.5. The extracted factors account for a large portion of the total variance and show high reliability. Therefore, they are taken forward into subsequent analyses.

Table 5. 5 EFA Results of M&A Performance and NPD Performance

		1	2	Communalities
M&A Performance	Market share	.80		.68
	Sales volume	.83		.74
	Sales growth	.86		.75
	Return on investment	.82		.79
	Return on sales	.85		.82
	Profitability	.85		.83
	Earnings per share	.84		.77
	Share price	.79		.66
NPD Performance	Revenues from new products compared with business objectives		.89	.82
	Growth in revenues from new products compared with business objectives		.89	.88
	Profitability of new products compared with your business objectives		.89	.85
	Growth in profitability of new products compared with business objectives		.90	.89
	Growth in sales of new products compared with business objectives		.88	.85
	Cronbach's Alpha	.95	.96	
	Eigenvalues	8.06	2.28	
	Cumulative Percentage of Total Variance	44.94	79.50	

5.2.1.5. EFA Results of Control Variables

In addition to the factor analysis of the independent, mediating, and dependent variables, Tables 5.6, 5.7, and 5.8 show the results of the factor structures of the control variables of outcome control, shared goals, and micro- and macro-environmental factors. First, as outcome control and shared goals reflect internal controls, these are included together in a factor analysis (Table 5.6). Outcome control and shared goals produce a two-factor structure having eigenvalues over 1 and explain total 77.65% of the variance, achieving high factor loadings and communalities well above .70 (MacCallum et al., 1999; Velicer & Fava, 1998). Moreover, Cronbach's alpha shows that the items of outcome control and shared goals achieve internal consistency within the corresponding scale exceeding the acceptable cut-off value of .70 (Hair et al., 2006).

Table 5. 6 EFA Results of Outcome Control and Shared Goals

		1	2	Communalities
Outcome Control	Our firm places significant weight on timely project completion.	.89		.82
	Our firm places significant weight on project completion within budget.	.86		.82
	Our firm places significant weight on meeting our requirements.	.82		.77
	Our firm places significant weight on accomplishing project goals.	.83		.74
Shared Goals	We share a joint vision of what is necessary for mutual success.		.86	.80
	We know with certainty what we expect of each other.		.84	.78
	We proactively work together to establish annual sales goals.		.82	.76
	We can state with certainty that we have the same basic beliefs about running a business.		.84	.73
	Cronbach's Alpha	.89	.88	
	Eigenvalues	4.77	1.44	
	Cumulative Percentage of Total Variance	39.20	77.65	

Table 5.7 shows the factor structure of 'micro-environmental factors' constituting customer characteristics, market munificence, and market turbulence. As expected, the factor structure produces three factors with eigenvalues above 1, explaining 71.01% of the variance, with all measure items loading onto their expected constructs. Moreover, the estimated factor loadings of the items are well-distributed between .54 and .87 ($\alpha = .86$) for Factor 1 and between .79 and .88 ($\alpha = .90$) for Factor 2, and between .61 and .83 ($\alpha = .77$) for Factor 3 (Velicer & Fava, 1998). High communality scores for the factor structures ranging between .60 and .87 show that the measurement variables have high correlation with their corresponding factor (MacCallum et al., 1999).

Table 5. 7 EFA Results of Micro-Environmental Factors

		1	2	3	Communalities
Customer Characteristics	Customers' price sensitivity		.79		.70
	Product/service evaluation criteria		.80		.77
	Customers' sensitivity to purchasing criteria		.88		.87
	Usage patterns of products/services		.79		.70
Market Munificence	Market growth			.75	.73
	Potential profitability			.61	.64
	Market size			.83	.71
Market Turbulence	Rate of competitors' strategic changes	.70			.61
	Rate of unexpected competitor entry	.79			.70
	Rate of competitor exit	.87			.77
	Rate of competitors' new product introductions	.85			.80
	Rate of change in customer product preferences	.71			.71
	Rate of change in customer demand	.54			.63
	Pressure from new customers	.58			.60
	Cronbach's Alpha	.86	.90	.77	
	Eigenvalues	7.25	1.63	1.07	
	Cumulative Percentage of Total Variance	28.92	54.90	71.01	

The measurement items relating to 'macro-environmental factors' produce a four-factor structure (economic condition, technological turbulence, socio-cultural condition, and regulatory condition) with moderate and high factor loadings, high communalities, and high percentage of total variance explained, all of which suggest that the four-factor solution is best (MacCallum et al., 1999; Velicer & Fava, 1998). However, the fourth-factor of economic condition has an eigenvalue that does not meet Kaiser's recommendation of eigenvalues greater than 1. It is decided to include this variable in this study though, because its items obtain well-distributed factors loading from .55 to .74 and uniformly keep high communalities above .70 (MacCallum et al., 1999; Velicer & Fava, 1998). Moreover, as seen in Table 5.8, the accumulated percentage of variance increases from 76.10% to 79.93%, when the economic-condition variable is included in the factor structure.

Table 5. 8 EFA Results of Macro-Environmental Factors

		1	2	3	4	Communalities
Economic Condition	Level of industrial development				.55	.71
	Communications infrastructure				.63	.76
	Inflation rates				.74	.78
Technological Turbulence	Rate of minor technological change		.89			.89
	Rate of new technological development		.88			.89
	Pressure for technological change		.82			.75
Socio-Cultural Condition	Cultural, values, beliefs, and attitudes			.82		.84
	Aesthetics preferences			.71		.71
	Cultural customs and traditions			.70		.83
	Religious traditions concerning the environment and society			.59		.68
Regulatory Conditions	Laws and regulations concerning company protection	.86				.85
	Laws and regulations concerning customer protection	.86				.85
	Laws and regulations concerning mergers and acquisitions	.87				.90
	Laws and regulations concerning competition	.83				.88
	Taxation	.68				.67
	Cronbach's Alpha	.94	.90	.88	.85	
	Eigenvalues	8.32	1.92	1.17	.58	
	Cumulative Percentage of Total Variance	55.48	68.29	76.10	79.93	

To summarise, the EFA produces factor solutions whereby all of the items load to their corresponding factor above .50 and have wide communalities above .38 and with no items cross-loading onto other constructs. Moreover, the solutions produced show an average variance accounted for of 74.29%, which is perceived as satisfactory as it exceeds the cut-off of 60% (Hair et al., 2006). In addition to the establishment of the construct validity of the measures, Cronbach's alpha for all multi-item constructs is well above the recommended threshold (.70) (Hair et al., 2006). Consequently, the measures used in this study are generally valid and reliable representations of the underlying constructs.

5.2.2. CFA Results

Following the generation of the underlying factors by EFA, a confirmation of the factors was conducted using CFA to verify the factor structure. Taking into consideration the ratio of 4 observations to parameter estimated of the factor structure, I divided the measures into two subsets of theoretically related variables and tested CFA (Morgan et al., 2004). CFA Model 1 included all measures relating to the independent variables and mediating variables. CFA Model 2 included the measures for performance and all control variables. As a result, conducting CFA with maximum likelihood estimation, the two models achieve the following fit indices: (1) Model 1: $\chi^2 = 898.46$ ($\chi^2/df = 2.18$), $p \leq .01$, CFI = .91, NNFI = .90, RMSEA = .09; and (2) Model 2: $\chi^2 = 761.29$ ($\chi^2/df = 2.01$), $p \leq .01$, CFI = .95, NNFI = .94, RMSEA = .09. Based on Marsh and Hau's (1996) recommended cut-offs for CFI ($\geq .90$) and NNFI ($\geq .90$) and Browne and Cudeck's (1992) recommended cut-offs for RMSEA ($\leq .10$), these models are judged as having good quality fit, indicating that the measures are reasonable and represent the underlying constructs. In addition, no changes are made to factor structures after CFA as all measurement items load well onto the appropriate constructs. See Appendix 5.1 for CFA factor loadings.

Table 5. 9 CFA Results

Model		$\chi^2_{df}; p$	CFI	NNFI	RMSEA
1	<p>Structural Integration</p> <p>Autonomy</p> <p>Knowledge Transfer From and To Acquired Firms</p> <p>Knowledge Sharing</p> <p>Exploitation and Exploration Innovation</p>	<p>898.46₄₁₃;</p> <p>$p \leq .01$</p>	.91	.90	.09
2	<p>Outcome Control</p> <p>Shared Goals</p> <p>M&A Performance</p> <p>NPD Performance</p> <p>Micro-Environmental Factors</p> <p>Macro-Environmental Factors</p>	<p>761.29₃₇₉;</p> <p>$p \leq .01$</p>	.95	.94	.09

Note. CFI = Comparative Fit Index, NNFI = Non-Normed Fit Index, RMSEA = Root Mean Square Error of Approximation

5.2.3. Common Method Variance

Examining for Common Method Variance (CMV) is necessary when data on the dependent and independent variables come from the same singles source in an organisation. Though precautions were implemented in survey design in line with established good practice (see Chapter 4, Section 4.3.1.3), CMV cannot be completely ruled out a priori and so post-hoc tests should be conducted. A popular test of CMV is a Harman’s single factor test, in which a factor analysis of all constructs simultaneously is performed (Malhotra et al., 2006). According to Malhotra et al. (2006), CMV is assumed to exist if a single factor accounts for the majority of the variance in variables. Following the recommendations of the scholars, I assessed the threat of CMV - using the Harman single factor test in EFA (a CFA test was excluded due to exceeding acceptable observation-to-parameter ratios). The results show that thirteen factors with eigenvalues greater than 1 are extracted, explaining 76.07% of the variance. Moreover, no single factor explains the majority of the variance (the first factor explains only 10.87% of the variance in the data). Therefore, it can be concluded that common method variance is unlikely to explain underlying factor structures or the results found. Detailed results of the CMV test can be found in Appendix 5.2.

5.2.4. Correlation and Discriminant Validity

Correlation coefficients provide a more fine-grained view of the degree and type of the relationship between two variables (Gravetter & Wallnau, 2009). The correlation coefficient, r , can range from a perfect positive correlation, +1.00, to a perfect negative correlation, -1.00, in

which a given change in the value of a x variable is accompanied by the same amount of change in a y variable (Groebner et al., 2008). Thus, if there is no relationship between two variables, the correlation between them is zero. If the closer the coefficient is to +1.00 or -1.00, the stronger the relationship is. As seen in Table 5.10, Pearson correlation analysis is performed on all variables (including control variables), producing 45 inter-correlations (except for the inter-correlations of the control variables). Out of the 45 inter-correlations, 23 pairs of variables (51.10%) have a statistically significant relationship, providing a preliminary support for some of the hypotheses. Though the correlation matrix helps researchers gain a picture of the relationship between two variables, the correlation should not be interpreted as evidence of the cause-and-effect relationship between variables (Gravetter & Wallnau, 2009).

In order to ensure that the constructs used in this study were acting independently, I conducted a convergent and discriminant validity check. Convergent validity was assessed by the extent to which the items correlate with each other within their corresponding factor. Discriminant validity was assessed by comparing the variance shared between the items of a construct and that construct with the variance of that construct shared with other constructs (Fornell & Larcker, 1981). Construct validity exceeds .7 and the average variance extracted for each construct exceeds .50 (Fornell & Larcker, 1981). Additionally, the square root of all Average Variance Extracted (AVE) values exceeds the relevant correlations. As a result, convergent and discriminant validity are not a problem (Fornell & Larcker, 1981). Table 5.10 presents the correlation matrix of all of the constructs used in this study with the diagonal elements containing the square root of the AVE for the corresponding construct.

Table 5. 10 Descriptive Statistics and Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	Structural Integration	.79														
2	Autonomy	-.39**	.78													
3	Knowledge Transfer From Acquired Firms	.32**	-.02	.74												
4	Knowledge Transfer To Acquired Firms	.49**	-.11	.35**	.71											
5	Knowledge Sharing	.51**	.04	.37**	.44**	.85										
6	Exploitation Innovation	.24**	.03	-.03	.35**	.32**	.82									
7	Exploration Innovation	.13	-.01	.05	.42**	.17*	.36**	.82								
8	NPD Performance	.29**	.12	.08	.26**	.35**	.38**	.20*	.90							
9	M&A Performance	.18*	.09	.07	.22**	.37**	.42**	.12	.55**	.84						
10	Outcome Control	.36**	.00	.11	.37**	.50**	.23**	-.01	.31**	.43**	.85					
11	Shared Goals	.40**	.21*	.25**	.37**	.71**	.30**	.05	.49**	.50**	.53**	.82				
12	Micro Environment	.10	.11	.05	.07	.17*	.00	.00	.12	.14	.04	.21*	.77			
13	Macro Environment	.04	.09	-.02	.03	.06	.18*	.10	.01	.06	-.12	.15	.66**	.76		
14	Firm Age	-.04	-.09	-.13	-.12	.02	.01	-.02	-.05	-.10	.04	-.09	.01	.08	N/A	
15	Firm Size	-.07	-.01	-.11	-.01	-.08	.08	-.04	-.02	.01	-.01	-.09	.05	.02	.26**	N/A
	Mean	5.12	3.78	4.34	4.74	5.05	5.51	4.51	4.30	4.77	5.79	5.44	4.45	4.73	2.83	2.50
	Std. Deviation	1.53	1.45	1.50	1.31	1.08	1.05	1.39	1.02	1.13	1.04	1.17	1.12	1.21	.52	.70
	Construct Reliability	.89	.89	.82	.79	.94	.89	.86	.96	.95	.92	.89	.82	.84	N/A	N/A
	AVE	.62	.61	.54	.50	.71	.68	.67	.81	.72	.75	.67	.60	.58	N/A	N/A

Note. ** Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed). N = 143. AVE Average Variance Extracted. n/a Not applicable as single item measure.

5.2.5. Summary of Validity and Reliability Tests

By conducting the validity and reliability tests of the measures, I find that they have (1) moderate to high factor loadings well above the acceptable limit of .60 on average (Velicer & Fava, 1998), (2) wide communalities distributed between .38 and .90 (MacCallum et al., 1999), and (3) an acceptable value for all Cronbach's alpha ($\geq .70$) (Hair et al., 2006), explaining (4) high portions of variance at 74.29% on average. Moreover, the goodness-of-fit-indices for the CFA measurement models reflect good fit characteristics, exceeding the recommended cut-offs for the relevant fit indices. Further, the dataset is not subject to CMV. I establish discriminant validity as the average variance extracted from each construct exceeds an accepted value of .50 and the correlation between that construct and all other constructs. Therefore, I confirm the validity and reliability of the measures.

5.3. Tests of Hypotheses

In this section, I present the findings of the hypothesised model. This study does not hypothesise the direct effects of structural integration and autonomy on M&A and NPD performance, drawing on the reasoning behind the structural-conduct-performance paradigm (McWilliams & Smart, 1995) and causal ambiguity in an action and its performance (Cording et al., 2008). Nevertheless, I tested the paths between structural integration and autonomy and M&A and NPD performance to show that the paths existed not in a direct way but in a manner that the innovation-based constructs and the knowledge-based constructs mediated the paths. Therefore, such causal inferences were detected by multiple regression analysis and mediation analysis by using the PROCESS macro. The results of the multiple regression analysis and mediation tests are presented in Section 5.3.1 and Section 5.3.2, respectively.

5.3.1. Regression Results

Multiple regression analysis was employed to show if a particular independent variable actually affects a dependent variable and to measure the direction and size of the effect of each of the independent variables on the dependent variable (Neuman, 2011). Table 5.11 shows the regression analysis results of the direct effects of structural integration and autonomy on M&A and NPD performance. Looking at the slope coefficients (β) in the regression models, these values reflect the strength of the relationships between the independent variables of structural integration and autonomy and each of the dependent variables of M&A and NPD performance. The results confirm prior thinking in Chapter 3: structural integration and autonomy do not have direct effects on either forms of performance. Moreover, the bootstrapping-based 95% confidence interval values contain a zero, showing that the null hypothesis is firmly accepted. More specifically, the results of the

multiple regression analysis are as follows: (1) the effect of structural integration on M&A performance is insignificant ($\beta = -.07$, $t = -.95$, $p \geq .10$, Confidence Intervals (CI) 95% [-.24, .08]); (2) the effect of structural integration on NPD performance is insignificant ($\beta = .08$, $t = 1.22$, $p \geq .10$, CI 95% [-.10, .25]); (3) the effect of autonomy on M&A performance is insignificant ($\beta = -.02$, $t = -.31$, $p \geq .10$, CI 95% [-.17, .14]); and (4) the effect of autonomy on NPD performance is insignificant ($\beta = .05$, $t = .82$, $p \geq .10$, CI [-.13, .23]). Therefore, there is no evidence on the direct relationships between structural integration and autonomy and M&A and NPD performance, which confirms the previously held position: structure in itself is not the driver of performance and implies that some intervening variables are the keys to unlocking performance. In this study, exploitation and exploration innovation are believed to be the intervening variables.

Table 5. 11 Standardised Direct Effects and 95% Confidence Intervals

M&A Performance						NPD Performance					
	β	t	Sig (1-tailed)	95% Confidence Intervals			β	t	Sig (1-tailed)	95% Confidence Intervals	
				Lower	Upper					Lower	Upper
Control Variables						Control Variables					
Outcome Control	.23	2.20	.04	-.01	.49	Outcome Control	.04	.47	.35	-.16	.28
Shared Goals	.38	3.76	.00	.14	.60	Shared Goals	.30	3.29	.00	.08	.52
Micro-Environmental Factors	.09	.88	.19	-.11	.29	Micro-Environmental Factors	.09	1.00	.15	-.08	.27
Macro-Environmental Factors	.01	.06	.48	-.22	.21	Macro-Environmental Factors	-.05	-.60	.26	-.23	.12
Firm Size	-.06	-.65	.32	-.28	.23	Firm Size	.00	-.04	.47	-.11	.11
Firm Age	-.08	-.68	.11	-.67	.56	Firm Age	-.07	-.67	.10	-.58	.48
Independent Variables						Independent Variables					
Structural Integration	-.07	-.95	.19	-.24	.08	Structural Integration	.08	1.22	.18	-.10	.25
Autonomy	-.02	-.31	.40	-.17	.14	Autonomy	.05	.82	.26	-.13	.23
F Value	5.75 (p ≤ .01)					F Value	4.48 (p ≤ .01)				
R²	.28					R²	.23				

Note. N = 143 Based on 2,000 bootstrap samples

5.3.2. Mediation Results

Mediation analysis was used in SPSS through applying the PROCESS macro to regression analysis. This macro, developed by Andrew Hayes (2012), enables rapid testing of indirect relationships and enables researchers to easily obtain a Preacher and Kelley (2011) kappa-squared value (K^2) and the significance level of a Sobel mediation test statistic (Z) with bias-corrected bootstrapped 95% confidence intervals and to decide if indirect effects exist. Using the PROCESS macro, I tested the mediating variables of (1) exploitation innovation in the effects of structural integration on M&A and NPD performance (Hypotheses 1a and 1b), (2) exploration innovation in the effects of autonomy on M&A and NPD performance (Hypotheses 2a and 2b), (3) knowledge transfer from an acquired firm in the effect of structural integration on exploitation innovation (Hypotheses 3a), (4) knowledge transfer from an acquired firm in the effect of autonomy on exploration innovation (Hypothesis 3b), (5) knowledge transfer to an acquired firm in the effect of structural integration on exploitation innovation (Hypothesis 4a), (6) knowledge transfer to an acquired firm in the effect of autonomy on exploration innovation (Hypothesis 4b), (7) knowledge sharing in the effect of structural integration on exploitation innovation (Hypothesis 5), and (8) knowledge sharing in the effect of autonomy on exploration innovation (Hypothesis 6).

Table 5.12 shows the results of the mediation mechanisms in which exploitation and exploration innovation mediate the relationships between structural integration and autonomy and M&A and NPD performance. Examination of specific indirect effects reveals that exploration innovation insignificantly mediates the effects of autonomy on M&A and NPD performance. Despite no mediation effect of exploration innovation detected, there is the partially significant mediating effect of exploitation innovation on the relationships between structural integration and M&A performance ($K^2 = .10$, CI [.03, .20]), $p \leq .05$) and between structural integration and NPD performance ($K^2 = .08$, CI [.02, .17]), $p \leq .05$). Therefore, Hypotheses 1a and 1b are only supported, but Hypotheses 2a and 2b are not supported.

Table 5. 12 Mediation Results of Exploitation and Exploration Innovation

	β	SE	t	Sig (1-tailed)		β	SE	t	Sig (1-tailed)
Direct Effects					Direct Effects				
M&A Performance as DV					NPD Performance as DV				
Exploitation Innovation	.43	.09	5.05	.00	Exploitation Innovation	.32	.08	4.16	.00
Structural Integration	.06	.06	1.10	.27	Structural Integration	.14	.05	2.69	.01
Kappa-Squared for Indirect Effects	Effect s (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)	Kappa-Squared for Indirect Effects	Effect s (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)
Structural Integration on M&A Performance via Exploitation Innovation	.10	.05	.03, .20	Partial*	Structural Integration on NPD Performance via Exploitation Innovation	.08	.04	.02, .17	Partial*
	β	SE	t	Sig (1-tailed)		β	SE	t	Sig (1-tailed)
Direct Effects					Direct Effects				
M&A Performance as DV					NPD Performance as DV				
Exploration Innovation	.10	.07	1.40	.16	Exploration Innovation	.15	.06	2.50	.01
Autonomy	.07	.07	1.07	.29	Autonomy	.08	.06	1.46	.15
Kappa-Squared for Indirect Effects	Effect s (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)	Kappa-Squared for Indirect Effects	Effect s (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)
Autonomy on M&A Performance via Exploration Innovation	.00	.01	.00, .05	None	Autonomy on NPD Performance via Exploration Innovation	.00	.01	.00, .00	None

Note. N = 143, ^aBased on 2,000 bootstrap resamples using the Sobel test, * p ≤ .05, ** p ≤ .01,

Table 5.13 shows the results of the mediation effects of knowledge transfer from/to an acquired firm to/from an acquired firm on the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation. Knowledge transfer to an acquired firm has a significant mediating effect on the relationship between structural integration and exploitation innovation ($K^2 = .14$, CI [.06, .22], $p \leq .01$). On the other hand, it is observed that the mediating effect of knowledge transfer from an acquired firm on the relationship between structural integration and exploitation innovation is found to be insignificant. Moreover, there are no mediating effects of knowledge transfer from/to an acquired firm to/from an acquired firm on the relationship between autonomy and exploration innovation. Therefore, Hypotheses 4a is supported, whereas Hypotheses 3a, 3b, and 4b are not supported.

Table 5. 13 Mediation Results of Knowledge Transfer

	β	SE	t	Sig (1-tailed)		β	SE	t	Sig (1-tailed)
Direct Effects					Direct Effects				
Exploitation Innovation as DV					Exploration Innovation as DV				
Knowledge Transfer From Acquired Firms	-.09	.06	-1.46	.15	Knowledge Transfer From Acquired Firms	.00	.08	.60	.54
Structural Integration	.19	.06	3.24	.00	Autonomy	-.01	.08	-.09	.93
Kappa-Squared for Indirect Effects	Effects (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)	Kappa-Squared for Indirect Effects	Effects (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)
Structural Integration on Exploitation Innovation via Knowledge Transfer From Acquired Firms	.04	.03	.00, .11	None	Autonomy on Exploration Innovation via Knowledge Transfer From Acquired Firms	.00	.01	.00, .01	None
	β	SE	t	Sig (1-tailed)		β	SE	t	Sig (1-tailed)
Direct Effects					Direct Effects				
Exploitation Innovation as DV					Exploration Innovation as DV				
Knowledge Transfer To Acquired Firms	.24	.07	.34	.00	Knowledge Transfer To Acquired Firms	.45	.08	5.40	.00
Structural Integration	.05	.06	.96	.34	Autonomy	.04	.07	.49	.62
Kappa-Squared for Indirect Effects	Effects (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)	Kappa-Squared for Indirect Effects	Effects (K^2)	Boot SE	Boot Lower, Upper	Sobel^a (Z)
Structural Integration on Exploitation Innovation via Knowledge Transfer To Acquired Firms	.14	.04	.06, .22	Partial**	Autonomy on Exploration Innovation via Knowledge Transfer To Acquired Firms	.05	.04	.00, .15	None

Note. N = 143, ^aBased on 2,000 bootstrap resamples using the Sobel test, * $p \leq .05$, ** $p \leq .01$,

As seen in Table 5.14, knowledge sharing significantly mediates the relationship between structural integration and exploitation innovation ($K^2 = .12$, $p \leq .01$, CI [.02, .23]). However, there is no evidence on the mediating role of knowledge sharing in the relationship between autonomy and exploration innovation. Therefore, Hypothesis 5 is supported, but Hypothesis 6 is not supported.

Table 5. 14 Mediation Results of Knowledge Sharing

	β	SE	t	Sig (1-tailed)
Direct Effects				
Exploitation Innovation as DV				
Knowledge Sharing	.26	.09	.29	.00
Structural Integration	.07	.06	1.10	.28
Kappa-Squared for Indirect Effects				
Structural Integration on Exploitation Innovation via Knowledge Sharing	Effects (K^2)	Boot SE	Boot Lower, Upper	Sobel ^a (Z)
	.12	.05	.02, .23	Partial**
	β	SE	t	Sig (1-tailed)
Direct Effects				
Exploration Innovation as DV				
Knowledge Sharing	.22	.11	2.03	.04
Autonomy	-.02	.08	-.19	.85
Kappa-Squared for Indirect Effects				
Autonomy on Exploration Innovation via Knowledge Sharing	Effects (K^2)	Boot SE	Boot Lower, Upper	Sobel ^a (Z)
	.01	.01	.00, .04	None

Note. N = 143, ^aBased on 2,000 bootstrap resamples using the Sobel test, * $p \leq .05$, ** $p \leq .01$

As shown in Table 5.15, I find that four of the six hypotheses are partially or fully supported and make crucial conclusions as follows: (1) there are no direct effects of structural integration and autonomy on M&A and NPD performance; (2) all of the hypotheses on autonomy are insignificant; (3) however, the effects of structural integration on M&A and NPD performance and on exploitation innovation are established by mediating variables; (4) structural integration of an acquiring and acquired firm improves M&A and NPD performance by generating exploitation innovation; and (5) structural integration generates exploitation innovation by transferring an acquiring firm's knowledge resources to an acquired firm and sharing knowledge with each other. Accordingly, structural integration plays the single most essential role in determining M&A and NPD performance. Structural integration requires exploitation innovation to produce superior M&A and NPD performance. Moreover, knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing enable exploitation innovation from structural integration.

Table 5. 15 Summary of Hypotheses Results

Hypothesis	Independent Variables	Mediators	Dependent Variables	Results
H1a	Structural Integration	Exploitation Innovation	M&A Performance	Significant
H1b	Structural Integration	Exploitation Innovation	NPD Performance	Significant
H2a	Autonomy	Exploration Innovation	M&A Performance	Insignificant
H2b	Autonomy	Exploration Innovation	NPD Performance	Insignificant
H3a	Structural Integration	Knowledge Transfer From Acquired Firms	Exploitation Innovation	Insignificant
H3b	Autonomy	Knowledge Transfer From Acquired Firms	Exploration Innovation	Insignificant
H4a	Structural Integration	Knowledge Transfer To Acquired Firms	Exploitation Innovation	Significant
H4b	Autonomy	Knowledge Transfer To Acquired Firms	Exploration Innovation	Insignificant
H5	Structural Integration	Knowledge Sharing	Exploitation Innovation	Significant
H6	Autonomy	Knowledge Sharing	Exploration Innovation	Insignificant

5.4. Conclusion of Results Chapter

This chapter presents the results of the tests conducted to verify the integrity of the data (non-response, common method bias) and the EFA and CFA tests on all measurement items, and finally reliability and validity test results. Following this, the hypothesis testing results are presented. Hypotheses were tested under regression using the PROCESS macro to facilitate the testing of the hypothesised mediation effects. Exploitation innovation is found to be a mediator that enables firms pursuing structural integration to derive positive performance outcomes. Furthermore, knowledge transfer from acquiring firms to acquired firms and knowledge sharing act as mediators for boosting exploitation innovation. Results pertaining to autonomy are non-significant and imply that other mechanisms are occurring for autonomy to translate into performance outcomes. In addition, it appears that exploration innovation also has no effect, and implies that gains from exploration may well need time to translate into performance. Finally, while theory led to the expectation that knowledge would improve the likelihood of exploration innovation occurring in the context of cross-border M&As, it is found that this is not the case. This again gives rise to an interesting question as to what are the drives of exploration innovation in this context.

In conclusion, in order for an acquiring firm to reap successful outcomes of post-acquisition M&A and NPD performance, it should integrate an acquired firm's functional

activities and realise exploitation innovation by relying on transferring the acquiring firm's knowledge resources to the acquired firm and improving knowledge sharing as a whole.

Chapter 6: Discussion

6. Discussion

In order for an acquiring and acquired firm to reap successful M&A and NPD performance, this study emphasised the need to choose post-acquisition structure appropriate for post-acquisition innovation as a determinant of M&A and NPD performance. Moreover, without knowledge-based understanding of the mechanisms of post-acquisition innovation, this study argued that our understanding of M&A outcomes would be limited. Therefore, this study addresses the question of how structural integration and autonomy affect post-acquisition innovation and then produce M&A and NPD performance within knowledge-based theory. Reasoned into a conceptual model, six hypotheses relating structural integration and autonomy, exploitation and exploration innovation, and knowledge transfer and knowledge sharing were created and subsequently tested. This chapter discusses the empirical findings emerging from the hypotheses testing results and addresses the contributions this study offers to literature in turn.

Initially, this study argued that structural integration and autonomy influenced M&A and NPD performance not directly but indirectly through mediators, drawing from the following mediation rationales. First, the SCP paradigm emphasises the construct of a theoretical model specifying causality flows from the designing of organisational structure to firm conduct and then to firm performance. Derived from the SCP paradigm, this study sought to clarify the causality flows by building mediators explaining the effects of post-acquisition structure (i.e., structural integration and autonomy) on post-acquisition conduct (i.e., exploitation and exploration innovation) and M&A and NPD performance. Second, Cording et al. (2008) ascribe poor integration and poor M&A performance to ambiguity about a causal link between integration decisions and performance outcomes. A lack of understanding of the link between them severely impairs managers' abilities to predict the outcomes of the choice of post-acquisition structure and therefore limits the potential for M&As. Lastly, Gibson and Birkinshaw (2004) argue that exploitation and exploration innovation are time-consuming and complex processes. The organisation of a firm's organisational capabilities and processes itself does not directly produce firm performance but through the realisation of exploitation and exploration innovation.

In line with the arguments from the SCP paradigm (McWilliams & Smart, 1995), casual ambiguity (Cording et al., 2008), and the mediation mechanisms of exploitation and exploration innovation (Gibson & Birkinshaw, 2004), I find that there are no direct effects of structural integration and autonomy on M&A and NPD performance. That is, post-acquisition

structure itself is not sufficient to realise M&A outcomes, but it guides an acquiring and acquired firm towards collaboration in innovating and then produces M&A outcomes (Grimpe, 2007). The findings show that post-acquisition structure and M&A outcomes are sequentially distant. Therefore, mediating variables are required to understand how a firm can extract performance gains from the choice of structural integration or autonomy (Homburg & Bucerius, 2005; Sinkovics et al., 2015).

Knowledge-based theory views knowledge transfer and sharing as the direct causes of knowledge development and innovation (Grant, 1996a). Without examination of the knowledge-based mechanisms of innovation, previous literature argues that that how innovation is driven is little clear (De Luca & Atuahene-Gima, 2007). From this point of view, this study argued that the intervening process between post-acquisition structure and post-acquisition innovation required examination and constructed knowledge-based mediation mechanisms of the relationships between post-acquisition structure and post-acquisition innovation.

The arguments about the need to construct the mediation-based mechanisms are in line with my overall theoretical model of this study. That is, without considering innovation-based mediating mechanisms and knowledge-based mediating mechanisms, at best scholars and managers acquire incomplete understanding of performance outcomes arising from the choice between structural integration and autonomy. Accordingly, this study constructed mediating mechanisms drawing to understand (1) how the post-acquisition structures of structural integration and autonomy led to successful M&A and NPD performance through exploitation and exploration innovation and (2) how structural integration led to exploitation innovation, or autonomy led to exploration innovation, through knowledge-based mediators of knowledge transfer and knowledge sharing. From now onwards, this chapter discusses the results of the hypotheses by focusing on the findings relating to structural integration and autonomy in turn. Section 6.1.1 focuses on how firms can attain performance results from structural integration (Hypotheses 1a, 1b) and how knowledge-based mediators enable exploitation innovation from a decision to pursue structural integration (Hypotheses 3a, 4a, 5). Section 6.1.2 focuses on how firms can attain performance results from granting autonomy (Hypotheses 2a, 2b) and how knowledge-based mediators enable exploration innovation from a decision to pursue autonomy (Hypotheses 3b, 4b, 6).

6.1. Post-Acquisition Structures

At the heart of the theoretical model constructed in this study were structural integration and autonomy. Depending on the choice of post-acquisition structure, this study argued that their contributions to M&A and NPD performance differed. From this point of view, exploitation innovation was hypothesised to translate into M&A and NPD performance from the choice of structural integration. Exploration innovation was hypothesised to translate into M&A and NPD performance from the choice of autonomy. Moreover, knowledge transfer and knowledge sharing were hypothesised to mediate the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation. Based on the development of the mediating mechanisms, this chapter discusses the results of the hypotheses on the mediating mechanisms in accordance with these two separate constructs of post-acquisition structure: structural integration and autonomy.

6.1.1. Structural Integration

When it comes to the mediating role of exploitation innovation in the relationships between structural integration and M&A and NPD performance (Hypotheses 1a and 1b, respectively), my findings lend support to the relevant hypotheses, showing that structural integration requires exploitation innovation to achieve superior M&A and NPD performance. This finding is in line with previous arguments about a need to structure operations in a way that reduces variation and maximises leveraging existing resources and capabilities to realise exploitation innovation (Burgelman, 2002; Jansen et al., 2006). Structural integration is appropriate post-acquisition structure for exploitation innovation that leads to superior M&A and NPD performance (Puranam et al., 2006).

By aligning an acquiring firm's functional operations with those of an acquired firm, the two previously separate firms can directly coordinate with one another in terms of their strategy, operational systems, and search processes (Larsson & Finkelstein, 1999; Pablo, 1994; Puranam & Srikanth, 2007). Under structural integration, the integrated entity can improve operational efficiency in its value chain and manufacture products at lower cost (Datta, 1991). Moreover, structural integration enables the acquiring and acquired firm to develop cooperative problem-solving systems, which help the firms to efficiently discover opportunity to improve their existing products (Katila & Ahuja, 2002; Nickerson & Zenger, 2004; Hsieh et al., 2007). Effectively addressing upstream and downstream problems that limit the value of existing products, the integrated acquiring and acquired firm can incrementally innovate existing products and refine and modify them. By the achievement of economies of scale and

the incremental extensions of existing products, the integrated firms can rapidly and adequately respond, adjust, or adapt to the demands of existing customers and markets through exploitation innovation, and therefore improve M&A performance. Hence, structural integration is a structuring method of realising exploitation innovation and then improves M&A performance.

In line with previous literature emphasising structural integration across functional activities for superior NPD performance (Chen et al., 2010), it is found that structural integration positively affects NPD performance through exploitation innovation. Integrating an acquired firm into an acquiring firm, they can organise resource allocations and task execution in a coordinated way that reduces errors in NPD and facilitates an efficient search for solutions to NPD (Atuahene-Gima & Murray, 2007; O’Cass et al., 2014). Improving efficiency and effectiveness in the process of problem-solving and NPD, the integrated acquiring and acquired firm can decrease the cost and time of producing new products and increase the quality and variety of new products at the same time (Al-Zu’bi & Tsinopoulos, 2012; Atuahene-Gima & Murray, 2007; Macher, 2006; O’Cass et al., 2014). Therefore, exploitation innovation in cross-border M&As adopting structural integration is advantaged for the continuous improvement of cost, variety, and quality in new products, which in turn contributes to NPD performance.

In addition to the innovation-based explanations about the role of structural integration in improving M&A and NPD performance, this study can provide knowledge-based explanations about the role of structural integration in realising exploitation innovation. As hypothesised, it is observed that knowledge transfer to an acquired firm (Hypothesis 4a) and knowledge sharing (hypothesis 5) significantly mediate the relationship between structural integration and exploitation innovation; however, the mediating variable of knowledge transfer from an acquired firm (Hypothesis 4b) is found to be insignificant. In line with previous arguments that structural integration is appropriate for exploitation innovation (Puranam et al., 2006), this study shows that structural innovation is a key to creating knowledge-based advantages that derive exploitation innovation. The results can be interpreted based on the principles about best practices (Szulanski, 1996) and the virtues of hierarchy within knowledge-based theory (Kogut & Zander, 1996).

Under the choice of structural integration, an acquiring firm can force an acquired firm to adopt its best practices, which is “an internal practice that is performed in a superior way and is deemed superior to internal alternate practices” (Szulanski, 1996, p. 28). By replicating

an acquiring firm's best practices in an acquired firm, the acquiring firm can effectively transfer its knowledge resources embedded in the best practices to the acquired firm. Aligning the acquired firm's existing resources and capabilities with the knowledge resources transferred from the acquiring firm, the firms remove redundancy being created and improve operational efficiency (Capron et al., 2001). Moreover, by imposing the acquiring firm's best practices on the acquired firm (Child et al., 2009), the acquiring firm can build a shared organisational system through which the acquiring firm effectively transfers its administrative knowledge resources for example to the acquired firm (Capron & Mitchell, 1998; Junni et al., 2015; Vaara et al., 2012). The alignment and standardisation of organisational systems and processes across the firms can improve efficiency in problem-solving (Nickerson & Zenger, 2004), which facilitate the discovery of opportunities to improve existing products (Hsieh et al., 2007). Consequently, knowledge transfer from an acquiring firm to an acquired firm under structural integration contributes to cost-saving and incremental innovations in existing products. Therefore, structural integration realises exploitation innovation through knowledge transfer from an acquiring firm to an acquired firm.

According to knowledge-based theory, a firm exists to offer a social context in which individuals communicate and interact; and provides a shared organisational system through which knowledge gets codified, widely shared, and diffused among individuals (Kogut & Zander, 1996). When individuals have a shared organisational identity, they put aside their self-interest for task implementation and promote mutual understanding of task execution (Brockman et al., 2010; Nakata & Im, 2010). Within an environment in which they have a sense of collective responsibility for tasks and build a trusting relationship, individuals become willing to collaborate and share knowledge with each other (Tsai, 2002). Moreover, when individuals have mutual understanding of knowledge-processing systems, they can have a better ability to evaluate the potential value of the knowledge of the other firm (Dyer & Singh, 1998; Lane & Lubatkin, 1998), which encourages individuals to share knowledge with each other. Therefore, a firm serves as a social community structured by organising principles, building a sense of belonging and promoting knowledge sharing among individuals (Kogut & Zander, 1996). This knowledge sharing, then promotes exploitation in innovation.

Extending the knowledge-based perspective on the firm, an integrated acquiring and acquired firm (who work together under common functional processes and systems) have to communicate with each other (Puranam et al., 2009). As the acquiring and acquired firm interact and communicate with each other, they can reduce differences in assumptions and mental maps and negative stereotyping and blend or create a shared organisational identity

that facilitates knowledge sharing with each other (Junni et al., 2015; Sarala & Vaara, 2010). Moreover, while the acquiring and acquired firm deal with tasks under the same sets of organisational boundaries, the firms can have immediate and repeated access to the existing knowledge of the other firm (Junni et al., 2015), which contributes to building mutual understanding of knowledge structure (Dyer & Singh, 1998). Under structural integration, an acquiring and acquired firm can acknowledge the potentially useful knowledge of the other firm and seek to share it (Junni et al., 2015; Vaara et al., 2012).

An integrated acquiring and acquired firm can build a shared identity and acknowledge the potential for knowledge-based advantages that the other firm can contribute to, which turns the firms efficient at and willing to share knowledge (Junni et al., 2015; Vaara et al., 2012). As the acquiring and acquired firm share knowledge with each other, they can deepen existing knowledge and improve problem-solving capabilities (Brown & Eisenhardt, 1995; Macher, 2006; Prabhu et al., 2005). Solving problems that are simple and easy to solve such as underperforming manufacturing (Macher, 2006), the integrated firms can reduce production costs and manufacture products on a scale. Moreover, having access to a partner firm's complementary knowledge that is not present in the existing knowledge bases of an acquiring and an acquired firm (Kim & Finkelstein, 2009), they can develop deeper and more specialised knowledge on existing products and customers (Katila & Ahuja, 2002; Xu, 2015). Therefore, an integrated acquiring and acquired firm can effectively identify existing problems and solutions and upgrade existing products (Nickerson & Zenger, 2004). Therefore, knowledge sharing between an acquiring and acquired firm pursuing structural integration can bring about exploitation innovations.

In spite of the discovery of the significant mediating effects of knowledge transfer to an acquired firm and knowledge sharing on the relationship between structural integration and exploitation innovation, there is no evidence on the mediating effect of knowledge transfer from an acquired firm on the relationship between structural integration and exploitation innovation. This indicates that the integration of the functional activities of an acquiring firm and those of an acquired firm does not guarantee the acquisition and exploitation of existing knowledge resources of the acquired firm and the realisation of exploitation innovation. This result can be attributed to the country-specific and context-bound nature of an acquired firm's knowledge resources (Anand & Delios, 2002; Capron & Pestre, 2002).

Knowledge tends to develop accommodating local customers and reflecting home country expertise (Anand & Delios, 2002). The knowledge resources developed by and

transferred from a foreign subsidiary and partner firm appear country-specific and context-bound (Anand & Delios, 2002; Capron & Pistre, 2002), which suggests a time-consuming and costly process of transforming and internalising context-bound knowledge resources within a recipient firm (Szulanski, 1996). Accordingly, the knowledge resources of an acquired firm that is in an institutionally distant country are too context-bound to absorb and utilise. For an acquiring firm seeking knowledge resources that can be readily applied to existing processes and existing products for exploitation innovation (March, 1991), the acquiring firm may find it difficult to assimilate and apply the acquired firm's knowledge resources embedded in its institutional context (Cohen & Levinthal, 1990; Szulanski, 1996). Therefore, within cross-border M&As seeking exploitation innovation, the local-specific knowledge resources of an acquired firm situated in a geographically and culturally distant country may have little to do with the realisation of exploitation innovation.

In summary, this study finds support for the mediating mechanisms of the relationships between structural integration and M&A and NPD performance via exploitation innovation. Moreover, the relationship between structural integration and exploitation innovation is significantly established via knowledge transfer to an acquired firm and knowledge sharing. These findings indicate that in order for an acquiring firm to reap successful outcomes of M&A and NPD performance, an efficiency-driven structure has to be designed that realises exploitation innovation. By aligning the internal activities of an acquiring firm and those of an acquired firm, they become efficient at innovating existing production and products. This contributes to exploitation innovation and M&A and NPD performance in the end.

To fully understand how structural integration nurtures exploitation innovation, this study suggests knowledge-based mediating mechanisms and observes that structural integration realises exploitation innovation through knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing between them. That is, an acquiring firm may force an acquired firm to accept its best practices to effectively transfer its knowledge resources and leverage them in a new setting, which contributes to the productive use of existing resources and the efficient organisation of problem-solving. Increases in productivity in existing resources and efficiency in problem-solving leads to cost-saving in production and incremental improvements in existing products. Therefore, knowledge transfer from an acquiring firm to an acquired firm within cross-border M&As adopting structural integration promotes exploitation innovation.

In addition to knowledge transfer from an acquiring firm to an acquired firm, knowledge sharing is found to mediate the relationship between structural integration and exploitation innovation. Under structural integration, an acquiring and acquired firm can build a shared identity and a shared organisational system that improve their capability to share knowledge. As they share knowledge with each other, they can develop deeper knowledge on existing market circumstances and products, which makes search and problem-solving advanced. Therefore, knowledge sharing between an integrated acquiring and acquired firm can improve their capability to address upstream and downstream issues that limit the value of existing products. Therefore, knowledge sharing can enable economies of scale and the refinement of existing products and therefore generate exploitation innovation.

The results of knowledge transfer from an acquiring firm as a mediator in the relationship between structural integration and exploitation innovation manifest a key driver of exploitation innovation. In contrast, no evidence on knowledge transfer from an acquired firm as a mediator in the relationship between structural integration and exploitation innovation implies that knowledge transfer from an acquired firm is nothing of importance in generating exploitation innovation. However, the results of knowledge sharing as a mediator in the relationship between structural integration and exploitation innovation indicate that cross-border M&As cannot realise exploitation innovation and reap successful M&A and NPD performance without an acquired firm's efforts to share knowledge with its acquiring firm. In this sense, structural integration acts as an effective means for transferring an acquiring firm's knowledge resources to an acquired firm as well as encouraging the acquired firm to share its knowledge with the acquiring firm.

6.1.2. Autonomy

This study hypothesised that autonomy was an organisational structure leading to M&A and NPD performance through the realisation of exploration innovation (Hypotheses 2a and 2b). Moreover, it was predicted that the relationship between autonomy and exploration innovation could be further explained by the knowledge-based mediators of knowledge transfer (Hypotheses 3b and 4b) and knowledge sharing (Hypothesis 6). However, in contrast to my expectations, none of the hypotheses regarding autonomy are significant. These findings fail to support a widely accepted view of autonomy as a way that increases its diminished relative standing (Hambrick & Cannella, 1993) and preserves its innovation capabilities (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). Thus, the research findings of autonomy are inconsistent with previous literature showing that autonomy is a predictor of superior M&A performance (Very et al., 1997), NPD performance (Atuahene-Gima, 2003), and

exploration innovation (Burgelman, 2002; Olson et al., 2005). These findings of the insignificant effect of autonomy give to a number of explanations.

It is important to first note that this study deviates away from many past studies on autonomy by focusing specifically on cross-border M&As and not inter-domestic M&As. As such, the results, though different to existing findings, do shed light on the mechanisms for/against success in the cross-border setting.

In contrast my expectation, this study finds that there is no mediating effect of exploration innovation on the relationships between autonomy and M&A and NPD performance. When it comes to a lack of the association between exploration innovation and M&A and NPD performance, this can be due to lagged effects of exploration innovation. Exploration innovation requires a firm to make long-term investments on the one hand but produces uncertain and more remote returns in time (March, 1991). While exploration innovation requires substantial time to translate into performance effects, the observations for this study include relatively young cross-border M&As, one-or-two years old M&As. Thus, it may be too early for the sampling firms to reap certain outcomes from exploration innovation. Thus, it is maybe not a huge surprise that there are no significant results.

When it comes to a lack of the association between autonomy and exploration innovation, the findings can be understood based on the requirements of exploration innovation (Hitt et al., 1996) and the theoretical logics behind organisational routines from literature on organisational learning theory (Hoang & Rothaermel, 2010; Lavie & Rosenkopf, 2006).

Exploration innovation, which is often described as “an endless downward cycle of search, failure, and unrewarding change” (Raisch & Birkinshaw, 2008, p. 392), requires substantial investments for R&D and risk sharing. However, an acquiring firm with a lack of control over an acquired firm’s strategy and operations cannot evaluate the strategic actions that the acquired firm takes and fully grasp the potential of the strategic proposals suggested by the acquired firm (Hitt et al., 1996). Therefore, autonomy hinders an acquired firm from achieving sufficient financial support from an acquiring firm and implementing and retaining exploration projects. Thus, exploration innovation is uncertain in cross-border M&As adopting autonomy.

A firm develops a competence in a certain area and engages in that activity more frequently to further enhance the competence, the repeated patterns of which form

organisational routines (Gilbert, 2005; Nelson & Winter, 1982). A firm takes repeated and automatic actions based on the repertoire of routines and searches for solutions within the domain of neighbourhood knowledge, resources, and routines (Amburgey & Miner, 1992; Allatta & Singh, 2011). Such local-search routines save time and energy in managing external factors and stimuli (Allatta & Singh, 2011; Lavie & Rosenkopf, 2006; Zhou & Wu, 2010). Thus, organisational routines are a powerful tool of efficiency in a firm's business operations, decision-making, and information-processing (Karim & Mitchell, 2000; Lavie & Rosenkopf, 2006).

Learning and problem-solving become easier for a firm because it develops and reinforces existing knowledge and resources through organisational routines. However, as a firm commits itself to its established routines, they discourage the firm from sensing opportunities beyond its current experience and from seeking for unfamiliar, new, innovative knowledge, resources, and capabilities that deviate from the status-quo (Dunlap-Hinkler et al., 2010; Gilbert, 2005). This is because organisational routines establish common mind-sets and cognitive map among managers (Amburgey & Miner, 1992). Therefore, routines cause the firm to exhibit attitudes towards risk-aversion and avoid breakthrough experiments that are essential for a firm's long-term survival (Gilbert, 2005; Rothaermel & Alexandre, 2009). Thus, the path-dependent nature of routines can turn organisational resources and capabilities into core rigidities when organisational routines no longer fit a new situation (Gilbert, 2005; Rothaermel & Alexandre, 2009). In order for a firm to overcome this self-destructive consequence, distant search for new solutions and experiments with breakthrough knowledge is vital. Therefore, a firm exploits inter-firm collaborations to improve organisational adaptation to new environments and complement the limitations of exploration activities inside the firm (Desyllas & Hughes, 2008; Vermeulen & Barkema, 2001). Therefore, a firm participates in cross-border M&As with the desire to generate exploration innovation and keeps its acquired firm autonomous as a source of innovative knowledge distant from its existing knowledge bases (Puranam & Srikanth, 2007).

Although an acquiring and acquired firm use cross-border M&As as a vehicle for exploration innovation and a source of overcoming organisational rigidity (Desyllas & Hughes, 2008; Karim & Mitchell, 2000; Puranam et al., 2006), organisational routines, which are deeply embedded in a firm at the heart of its behaviour, capabilities and learning, provide little theoretical and practical guidance to support exploration innovation (Hoang & Rothaermel, 2010). That is, organisational routines, which are efficiency-oriented in nature, can limit organisational capabilities to search for and exploit new solutions that are deviated from

typical knowledge domains (Levinthal & March, 1993). Based on this argument, within cross-border M&As seeking exploration innovation, an acquiring and acquired firm apply new and novel solutions and ideas acquired from the other firm to their old and established routines. That is, the firms lack appropriate knowledge and capabilities driving exploration innovation. Therefore, there is no evidence on the realisation of exploration innovation through cross-border M&As.

Continuing to interpret the insignificant mediator of exploration innovation in the relationship between autonomy and M&A and NPD performance within organisational routines, Lavie and Rosenkopf's (2006) argument is insightful. They argue that a firm achieves exploitation and exploration innovation over time by gradually building shared organisational routines adapted to both exploitation and exploration innovation. That is, collaborating firms can make an inter-temporal balance between exploitation and exploration innovation, building shared organisational routines facilitating exploitation innovation at one point in time, but exploration innovation at another point in time. Therefore, it is essential for collaborating firms to build shared organisational routines and implement exploration-oriented activities and exploitation-oriented activities at different points in time.

Extending Lavie and Rosenkopf's (2006) view on the temporal separation of exploitation and exploration innovation, it is difficult and time-consuming to build shared organisational routines adapted to exploration innovation and within cross-border M&As of an autonomous acquiring and acquired firm. This is because exploration innovation, the returns of which are uncertain and remote in time (March, 1991), can require considerable time for an acquiring and acquired firm to reap the outcomes of exploration innovation and develop shared organisational routines adapted to exploration innovation. Moreover, such challenges of establishing shared organisational routines adapted to exploration innovation may be more distinct within the context of cross-border M&As where an acquiring and acquired firm stay independent of each other (i.e., autonomy). Within cross-border M&As adopting autonomy, an acquired firm is relatively free from the pressure of accepting conflicting organisational routines and willing to keep its unique routines (Puranam et al., 2006). Accordingly, it may take long time for cross-border M&As of two autonomous firms to collaborate in developing shared organisational routines adapted to exploration innovation. Thus, it may be too early for the sampling firm that had completed M&As during the period between 2012 and 2015 to reap the outcomes of exploration-oriented activities and build shared organisational routines adapted to exploration innovation. Therefore, a lack of shared organisational routines

appropriate for exploration innovation hinders an acquiring and acquired firm from realising exploration innovation.

In addition to the hypotheses on the innovation-based mechanisms in which autonomy affected M&A and NPD performance via exploration innovation, this study hypothesised that the relationship between autonomy and exploration innovation was mediated by knowledge transfer and knowledge sharing. On the other hand, there are no significant mediating effects of knowledge transfer and knowledge sharing detected in the relationship between autonomy and exploration innovation.

The findings regarding knowledge transfer can be interpreted related to the motive for participation in cross-border M&As. Cross-border M&As can be pursued with the desire to achieve risk-spreading advantages, where an acquiring firm's income stream is stabilised and its return variances are reduced (Seth, 1990). This is because an acquiring and acquired firm may have limited potential for synergy creation resulting from the transfer and exploitation of knowledge resources of the other firm. In such cross-border M&As, an acquiring firm is willing to give much autonomy to an acquired firm (Datta & Grant, 1990; Lin, 2014). Therefore, the autonomous acquiring and acquired firm remain interdependent of each other with little knowledge-based interaction and conduct and consequently produce few knowledge-based advantages. Therefore, the insignificant roles of knowledge transfer from/to an acquiring firm to/from an acquired firm within cross-border M&As adopting autonomy can be due to the acquiring firm's little intention to take knowledge-based actions and thus insignificant exploration innovation in the end.

In line with the insignificant mediating role of knowledge transfer in the relationship between autonomy and exploration innovation, it is also observed that there is no evidence on knowledge sharing as a mediator in the relationship between autonomy and exploration innovation. This finding indicates that autonomy is not a sufficient condition for an acquiring and acquired firm to share their knowledge and realise exploration innovation.

An acquiring firm may decide to separate an acquired firm from its operations because it may get concerned about the possibility for employee resistance and cultural clash occurring in the implementation of post-acquisition (Larsson & Finkelstein, 1999; Stahl & Voigt, 2008). Alternatively, an acquiring firm may enable an acquired firm to run its operations autonomously. Nevertheless, redundant knowledge between the autonomous acquiring and acquired firm still exist and incur costs (Sears & Hoetker, 2014). Therefore, the acquiring firm normally intends to remove the redundancy on the acquired-firm side (Capron et al., 2001),

which can lower its relative standing and increase turnover among the acquired personnel (Hambrick & Cannella, 1993; Lubatkin et al., 1999). The acquired firm with diminished relative standing and the loss of its human capital undermine its motivation about knowledge sharing with the acquiring firm and its ability to solve problems and innovate (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). Therefore, autonomy may not necessarily improve an acquired firm's relative standing and allow the acquired firm to preserve its innovation capabilities (Sears & Hoetker, 2014). However, autonomy can rather limit the potential value of knowledge sharing between an acquiring and acquired firm and their ability to realise exploration innovation.

The other explanation about the finding of the insignificant mediating role of knowledge sharing can be given based on the understanding of common knowledge within knowledge-based theory. Knowledge-based theory highlights the development of common knowledge (Grant, 1996a), which is facts, concepts, and propositions that are understood simultaneously by multiple individuals of a firm as a result of the transfer, sharing, and combination of their specialised knowledge (Hoopes & Postrel, 1999). This is because common knowledge can reduce a firm's switching cost of moving to unrelated and different knowledge and new investments in R&D for invention and discovery of new knowledge (Breschi et al., 2003; Tanriverdi & Venkatraman, 2005). In this sense, common knowledge between an acquiring and acquired firm economises in knowledge sharing and improves understanding of existing products and operational efficiency, which is beneficial to exploitation innovation. However, in cross-border M&As seeking exploration innovation, common knowledge between the acquiring and acquired firm limits novel combination and the creation of breakthrough innovation (Makri et al., 2010). Therefore, knowledge sharing between an autonomous acquiring and acquired firm can accumulate common knowledge beyond optimal levels, which in turn impairs exploration innovation.

In summary, this study finds no support for the role of autonomy in leading to post-acquisition innovation and eventual M&A outcomes. The findings are inconsistent with previous arguments about autonomy as a way of reducing the disruptive consequences of M&A events such as a loss of an acquired firm's relative standing and the disruption of its social contexts (Hambrick & Cannella, 1993; Puranam et al., 2006). With regard to the results of autonomy, it is observed that autonomy is not a sufficient condition to result in performance outcomes through the realisation of exploration innovation and to realise exploration innovation through knowledge transfer and knowledge sharing. Seven explanations about the findings are given. First, exploration innovation is a long-term

investment strategy. For the sampling firms with one-or-two year cross-border M&As, it may be too early to gain performance outcomes from exploration innovation. Second, exploration innovation is a risky investment strategy. An acquiring firm independent of an acquired firm (i.e., autonomy) is not familiar with its businesses. Therefore, the acquired firm may fail to increase an acquiring firm's managerial commitment to its exploration projects. For this reason, the acquired firm cannot consistently implement exploration innovation due to a lack of financial capital. Third, from the perspective of organisational routines within organisational learning theory, a firm lacks knowledge and capabilities to realise exploration innovation. While a firm commits itself to organisational routines and takes repeated actions over time in similar situations, the firm becomes efficient at decision-making, information-processing, and operations. However, the reliance on organisational routines can trap the firm into organisational rigidity and prevent the firm from effectively adapting to a changing environment. Therefore, the firm uses cross-border M&As as a way to realise exploration innovation and seek new and novel knowledge that is deviated from its existing knowledge bases. However, organisational routines, which are efficiency-oriented in nature and deeply embedded in an acquiring and an acquired firm, can provide limited guidance to support exploration innovation. As a consequence, organisational routines limit the potential for exploration innovation. Fourth, the realisation of exploration innovation requires shared organisational routines between an acquiring and acquired firm. However, it may be time-consuming for an acquiring and acquired firm that intend to keep the way they have operated (i.e., autonomy) to build shared organisational routines appropriate for exploration innovation. Hence, it may be too early for the sampling firms that had completed a cross-border M&A between 2012 and 2015, which is viewed as the early stages of a post-acquisition process (Bresman et al., 2010), to build the relevant routines shared between the firms. Fifth, an acquiring firm may use cross-border M&As as risk-spreading strategy, by purchasing an acquired firm that has different industry life cycle from that of the acquiring firm. With the risk-spreading motive for M&A participation, the autonomous acquiring and acquired firm conduct few knowledge-transfer activities and therefore produce few innovation outcomes. Sixth, autonomy is still followed with the removal of redundant knowledge, and this normally occurs on an acquired-firm side. Divesting an acquired firm's redundant knowledge, an acquiring firm can maximise acquired employees' sense of loss and impair their ability to share knowledge across organisational boundaries. Therefore, the acquired firm's capability to radically innovate is impaired. Finally, knowledge sharing increases common knowledge between an acquiring and acquired firm beyond optimal levels. This can reduce the potential

for novel combinations of their knowledge and the generation of exploration innovation as a result.

6.2. Theoretical Contribution

This study intends to contribute to existing literature on cross-border M&As in several ways. The most important contribution of this study is to answer the question of how post-acquisition structure affects post-acquisition innovation and then M&A outcomes. Much existing literature views structural integration and autonomy as the predictors of M&A success (Grimpe, 2007; Homburg & Bucorius, 2005; Larsson & Finkelstein, 1999; Lin, 2014; Saxton & Dollinger, 2004; Weber, 1996; Zollo & Singh, 2004). However, it is limited to an efficiency-based perspective (Datta, 1991) and the perspective of relative standing (Hambrick & Cannella, 1993). For example, drawing from the efficiency-based perspective, an acquiring and acquired firm improve operational efficiency by reconfiguring their existing resources and reducing redundancy (Datta, 1991). Drawing from the perspective of relative standing, existing literature sees autonomy as a function of improving an acquired firm's relative standing and retaining its executives and personnel (Hambrick & Cannella, 1993). The acquired firm's increased relative standing and the retention of its human and social capital keep acquired employees productive and innovative. In seeking to fill the gap in the roles of structural integration and autonomy in improving M&A and NPD performance, this study constructed innovation-based mediating mechanisms and hypothesised that structural integration and autonomy affected M&A and NPD performance through post-acquisition innovation.

This study finds that exploitation innovation mediates the relationships between structural integration and M&A and NPD performance. These findings show that structural integration is a key to unlocking M&A and NPD performance through the realisation of post-acquisition innovation. That is, M&A success rests on the choice of structural integration and the realisation of post-acquisition innovation. This finding contributes to three lines of previous literature and knowledge. In line with the principles about the SCP paradigm (McWilliams & Smart, 1995), causal ambiguity (Cording et al., 2008), and the mediating mechanisms of exploitation and exploration innovation (Gibson & Birkinshaw, 2004), this study shows that a mediator is needed to explain the relationship between structural integration and M&A outcomes (Cording et al., 2008; Homburg & Bucorius, 2005; Sinkovics et al., 2015). In line with Capron's argument (1991) that an acquiring and acquired firm improve M&A outcomes through the enhancement of innovation capabilities, this study shows that post-acquisition innovation functions as a mediatory cause of M&A and NPD performance. Therefore,

structural integration served as a context in which an acquiring and acquired firm improved post-acquisition innovation and then produced M&A outcomes. Finally, in line with the process perspective and the efficiency perspective of M&As on structural integration as a means of improving M&A and NPD performance (Chen et al., 2010; Datta, 1991; Grimpe, 2007), this study shows that structural integration is a determinant of M&A and NPD performance. Therefore, this study contributes to existing knowledge on the role of structural integration in advancing M&A and NPD performance and a post-acquisition mechanism of M&A success from an innovation-based perspective.

Another significant contribution of this study is to provide knowledge-based explanations about post-acquisition innovation and the role of structural integration in leading to post-acquisition innovation. Although innovation is the outcomes of knowledge transfer, sharing, and combination, existing literature on post-acquisition innovation is significantly limited to resource-based theory (Cefis & Marsili, 2015; Makri et al., 2010), organisational learning theory (Ahuja & Katila, 2001; Cloudt et al., 2006; Kapoor & Lim, 2007; Lee & Kim, 2016; Makri et al., 2010), and a process perspective (Chen et al., 2010; Grimpe, 2007). For example, the scholars of resource-based theory attribute increases in innovation frequency, quantity, and quality to large firm size (Cefis & Marsili, 2015) and the presence of knowledge complementarity between an acquiring and an acquired firm (Makri et al., 2010). The scholars of organisational learning theory attribute post-acquisition innovation to the enhancement of absorptive capacity and efficient organisational learning, which are facilitated by (1) greater absolute knowledge size of an acquiring firm (Desyllas & Hughes, 2010) or an acquired firm (Ahuja & Katila, 2001), (2) smaller knowledge size of an acquired firm compared to the knowledge size of an acquiring firm (Ahuja & Katila, 2001), and (3) the presence of knowledge similarity between an acquiring and an acquired firm (Ahuja & Katila, 2001; Cloudt et al., 2006; Desyllas & Hughes, 2010; Kapoor & Lim, 2007; Lee & Kim, 2016; Makri et al., 2010). Moreover, extending the logic behind organisational routines that are the foundations of what a firm can do, the scholars of organisational learning theory find structural integration as an impediment to an acquired firm's innovation capabilities embedded in its value and routines and perceive an acquired firm's autonomy as a catalyst for its consistent innovation (Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). Finally, the scholars of a process perspective insist in structural integration as a shared communication mechanism in which an acquiring and acquired firm collaborate with each other and produce effective and efficient innovation (Bauer et al., 2016; Chen et al., 2010; Grimpe, 2007).

Prior studies give insights into how knowledge can be leveraged for innovation (Ahuja & Katila, 2001; Makri et al., 2010) and how the post-acquisition structures of structural integration and autonomy can affect post-acquisition innovation (Bauer et al., 2016; Chen et al., 2010; Grimpe, 2007; Kapoor & Lim, 2007; Paruchuri et al., 2006; Puranam et al., 2006). However, the knowledge-based activities and capabilities of an acquiring and acquired firm are often overlooked in explaining post-acquisition innovation. The role of structural integration in leading to post-acquisition innovation from the knowledge-based perspective is little clear. That is, our understanding of whether knowledge transfer from/to an acquiring firm to/from an acquired firm and knowledge sharing actually occur for post-acquisition innovation is limited. How structural integration contributes to post-acquisition innovation is discussed. Hence, this study incorporated the knowledge-transfer activities and knowledge-sharing capabilities of an acquiring and acquired firm into the discussion on post-acquisition innovation. It was hypothesised that knowledge transfer and knowledge sharing mediated the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

This study finds that exploitation innovation is translated from the choice of structural integration through knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing. In order for post-acquisition innovation to be better understood, the knowledge-based activities and capabilities of an acquiring and acquired firm should be taken into consideration as mediatory causes producing post-acquisition innovation. Moreover, in contrast to the perspective of organisational learning theory on structural integration as an impediment to achieving post-acquisition innovation, this study shows that structural integration leads to post-acquisition innovation within knowledge-based theory. This is consistent with the process perspective on structural integration as a catalyst for post-acquisition innovation (Chen et al., 2010; Grimpe, 2007). Therefore, this study contributes to existing knowledge on post-acquisition innovation and the role of structural integration in realising post-acquisition innovation within knowledge-based theory. Hence, alongside previous literature discussing post-acquisition innovation within resource-based theory (Cassiman et al., 2005) and organisational learning theory (Desyllas & Hughes, 2010), this study can be found pioneering delving into the knowledge-based conditions under which post-acquisition innovation is driven.

Third, this study improves understanding of the performance effects of exploitation innovation and provides knowledge-based explanations about exploitation innovation and the role of structural integration in realising exploitation innovation. Building from the

exploitation-exploration paradigm (March, 1991), existing literature on M&As expands post-acquisition innovation alongside exploitation and exploration innovation (Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). However, the relevant literature provides limited understanding of performance effects arising from exploitation and exploration innovation (with the exception of Stettner and Lavie (2013)) and the realisation of exploitation and exploration innovation within knowledge-based theory (Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). In seeking to fill the gap, this study hypothesised that exploitation and exploration innovation acted as mediatory causes of M&A and NPD performance. Moreover, this study hypothesised that there were the mediating effects of knowledge transfer and knowledge sharing on the relationships between structural integration and exploitation innovation and between autonomy and exploration innovation.

This study finds that exploitation innovation is the driver of M&A and NPD performance. Moreover, knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing enable exploitation innovation from the choice of structural integration. Providing a post-acquisition mechanism in which structural integration produces exploitation innovation and then improves M&A and NPD performance, this study contributes to existing knowledge on a post-acquisition mechanism of M&A success from an innovation-based perspective. Providing knowledge-based conditions under which exploitation innovation is realised, this study contributes to existing knowledge on the realisation of exploitation innovation within knowledge-based theory. In line with previous arguments about a need to design an efficiency-oriented structure to realise exploitation innovation (Burgelman, 2002) and structural integration as a means of realising exploitation innovation (Puranam et al., 2006), this study shows that structural integration is an appropriate choice of post-acquisition structure for exploitation innovation. Thus, this study suggests an integrative framework of post-acquisition innovation and cross-border M&A success within knowledge-based theory.

Lastly, this study provides empirical evidence on NPD performance in cross-border M&As. Though previous literature identifies post-acquisition innovation as a major motive for M&A participation, it limits M&A outcomes to M&A performance and relies on M&A performance as a proxy for M&A success (Sears & Hoetker, 2014). That is, little existing literature studies M&A outcomes from an innovation-based perspective. For example, a study revolving M&As around post-acquisition innovation does not investigate its performance and separate the outcomes of post-acquisition innovation from M&A performance (Sears & Hoetker, 2014). Thus, there is a gap in existing knowledge on how post-acquisition innovation is transformed into successful innovation performance. In seeking to fill the gap, this study

examines the performance of post-acquisition innovation in the form of NPD performance (Chen et al., 2010). Therefore, this study understands M&A outcomes and M&A success from the perspective of NPD performance and contributes to existing knowledge on what successful cross-border M&As and post-acquisition innovation can bring about.

As a result of the investigation of M&A outcomes and the performance of post-acquisition innovation from the measures of NPD performance, this study finds that exploitation innovation enables superior NPD performance from structural integration. Surprisingly, the finding of the significant role of exploitation innovation in the relationship between structural integration and NPD performance is parallel to that of the mediating role of exploitation innovation in the relationship between structural integration and M&A performance. Taking into consideration NPD performance as another dimension of M&A outcomes alongside M&A performance, this study contributes to existing knowledge on M&A success and successful innovation performance from the standpoint of NPD performance.

This study contributes to the five following areas. First, this study provides innovation-based explanations about the role of structural integration in leading to M&A and NPD performance. Second, this study suggests a post-acquisition mechanism of M&A and NPD performance from an innovation-based perspective. Third, this study provides knowledge-based explanations about the role of structural integration in realising exploitation innovation. Fourth, this study contributes to existing knowledge on how knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing are used as a way to achieve exploitation innovation. Fifth, this study examines innovation performance and M&A outcomes from the perspective of NPD performance. As a result, this study suggests an integrative framework of post-acquisition innovation and cross-border M&As within knowledge-based theory.

6.3. Conclusion of Discussion Chapter

In order to provide deeper understanding of how post-acquisition structure produces M&A outcomes, this study tested innovation-based mediating mechanisms in which structural integration and autonomy affected M&A and NPD performance through exploitation and exploration innovation. To this end, this study predicted that there were knowledge-based mediating effects that enabled exploitation innovation from structural integration and exploration innovation from autonomy.

This study finds that structural integration requires knowledge transfer to an acquired firm and knowledge sharing to realise exploitation innovation, and exploitation innovation acts

as a mediatory cause of M&A and NPD performance. Providing a post-acquisition mechanism in which structural integration affects post-acquisition innovation and subsequently M&A and NPD performance within knowledge-based theory, this study contributes to existing knowledge and literature in the following ways. Building from the efficiency-based perspective of M&As on structural integration (Saxton & Dollinger, 2004; Zollo & Singh, 2004), this study offers innovation-based explanations about the role of structural integration in leading to M&A and NPD performance. Beyond the perspectives of resource-based theory and organisational learning theory on post-acquisition innovation (Ahuja & Katila, 2001; Cassiman et al., 2005; Desyllas & Hughes, 2010; Miozzo et al., 2016), this study employs knowledge-based theory and provides knowledge-based understanding of post-acquisition innovation in the form of exploitation innovation and the role of structural integration in producing post-acquisition innovation. In addition to explanations about M&A success from the perspective of M&A performance, this study develops knowledge on M&A outcomes and the performance of post-acquisition innovation from the perspective of NPD performance. In this regard, this study shows that structural integration is a pre-requisite for post-acquisition innovation and M&A success and contributes to existing knowledge on cross-border M&As with knowledge-based theory.

Chapter 7: Conclusion

7. Conclusion

In this conclusion chapter, I restate the research aim and hypotheses that this study achieved and tested and summarise findings to bring out the theoretical contribution of this study. Then, I conclude this study by discussing its limitations and the important directions for future work that emerges from this study.

7.1. Summary of the Research

This study aimed to address the issue of how the post-acquisition structures of structural integration and autonomy affect post-acquisition innovation and subsequently M&A and NPD performance, drawing from knowledge-based theory.

The motivation behind this research stemmed from critical problems apparent in our knowledge of post-acquisition M&A performance. Specifically, existing literature largely limits its analysis on the direct effects of structural integration and autonomy on M&A performance from the efficiency and relative-standing perspectives of M&As (Sinkovics et al., 2015; Very et al., 1997; Weber, 1996; Zollo & Singh, 2004). However, this study argued that structural integration and autonomy served as a context for post-acquisition conduct and then generated performance based on the logic behind the SCP paradigm (McWilliams & Smart, 1995) and previous arguments about casual ambiguity (Cording et al., 2008). In other words, this study predicted that structural integration and autonomy produced M&A outcomes not directly but indirectly through mediating variables that represented post-acquisition conduct, specifically post-acquisition innovation.

To date, our understanding of the intermediate variables and the mechanisms at play is limited, leading theory and knowledge to be underdeveloped, underspecified, and potentially faulty. Along with that is the limited treatment given to antecedents of performance such as innovation activity. Existing literature on post-acquisition innovation is significantly limited to resource-based theory (Cefis & Marsili, 2015; Makri et al., 2010), organisational learning theory (Ahuja & Katila, 2001; Cloudt et al., 2006; Kapoor & Lim, 2007; Lee & Kim, 2016; Makri et al., 2010), and a process perspective (Chen et al., 2010; Grimpe, 2007). Of increasing importance are ideas of organisational learning theory, which attribute post-acquisition innovation to greater absolute knowledge of an acquiring firm (Desyllas & Hughes, 2010) or an acquired firm (Ahuja & Katila, 2001). However, the knowledge-based activities and capabilities of an acquiring and acquired firm are often overlooked in explaining post-acquisition innovation. That is, understanding of whether knowledge transfer from/to an acquiring firm to/from an acquired firm actually occurs for post-acquisition innovation and how the acquiring

and acquired firm's capability to share knowledge with each other contributes to innovation is little discussed. By adopting knowledge-based theory, this study seeks to advance knowledge on these aspects of M&A success.

This study addressed its research aim by testing (1) innovation-based mediating mechanisms in which structural integration affected M&A and NPD performance via exploitation innovation (Hypotheses 1a and 1b) and autonomy affected M&A and NPD performance via exploration innovation (Hypotheses 2a and 2b); and (2) knowledge-based mediating mechanisms in which structural integration realised exploitation innovation via knowledge transfer and knowledge sharing (Hypotheses 3a, 4a, and 5) and autonomy realised exploration innovation via knowledge transfer and knowledge sharing (Hypotheses 3b, 4b, and 6). Hence, this study tested a post-acquisition mechanism in which structural integration and autonomy affected post-acquisition innovation and then produced M&A and NPD performance within knowledge-based theory.

Among the six hypotheses suggested in the hypothesised model, this study found four of them fully or partially significant. It was observed that exploitation innovation positively mediated the relationships between structural integration and M&A and NPD performance. Knowledge transfer to an acquired firm and knowledge sharing positively mediated the relationship between structural integration and exploitation innovation; however, there was no evidence on knowledge transfer from an acquired firm to an acquiring firm as a mediator in the relationship between structural integration and exploitation innovation. In contrast to the research findings of structural integration, there was no evidence of autonomy as a determinant of either M&A performance or NPD performance. Moreover, neither knowledge transfer nor knowledge sharing mediated the relationship between autonomy and exploration innovation. These results and their contributions are examined in the next section.

7.2. Research Findings and Contributions

Structural integration is an efficiency-oriented structure reducing variation in scope and newness and improving the understanding of existing problems. Achieving operational efficiency and organising an efficient process of problem-solving, an integrated acquiring and acquired firm engage in upstream and downstream activities that can be structured and produce predictable and certain results. Streamlining value chain, the integrated acquiring and acquired firm can increase the productivity of their existing resources and capabilities and achieve economies of scale. Discovering opportunities to improve customer benefits, the integrated firms refine and modify existing products and pay close attention to existing

customers' demands through the incremental extension of existing products. Offering existing products at lower price and reinforcing existing customer bases, the integrated firms can improve M&A performance via exploitation innovation. In a similar vein, bringing about efficiency in problem-solving and NPD, exploitation innovation enables an integrated acquiring and acquired firm to reduce NPD cost and produce quality, diverse, new products in cross-border M&As. In cross-border M&As adopting structural integration, exploitation innovation is transformed into successful NPD performance. Thus, exploitation innovation is a mediatory cause of M&A and NPD performance in cross-border M&As. Structural integration requires exploitation innovation to translate into successful M&A and NPD performance.

Underlying the post-acquisition mechanism in which structural integration led to exploitation innovation and then succeeded in M&A and NPD performance, knowledge-based mechanisms existed for enhancing exploitation innovation. Integrating the functional operations of an acquired firm with those of an acquiring firm, the acquiring firm is focused on transferring its knowledge resources to the acquired firm (Capron & Mitchell, 1998). Replicating the acquiring firm's existing knowledge resources into the acquired firm, the acquiring firm can exploit them in the acquired firm setting and combine them with the knowledge and resources of the acquired firm. Therefore, the integrated firms can reduce redundancy (Datta, 1991) and effectively align a process of search for solutions to existing problems (Nickerson & Zenger, 2004). Increasing efficiency in operation, production, and problem-solving, the integrated firms can generate cost-saving effects and incrementally innovate existing products. Therefore, transferring an acquiring firm's knowledge resources to an acquired firm under structural integration contributes to exploitation innovation.

In line with knowledge transfer to an acquiring firm, knowledge sharing mediated exploitation innovation resulting from a decision on structural integration. Structural integration can bring an acquiring and acquired firm to communicate with each other (Puranam & Srikanth, 2007). While they interact with each other, they reduce negative stereotyping and build a shared identity (Puranam & Srikanth, 2007; Sarala & Vaara, 2010). Moreover, as the acquiring and acquired firm execute common tasks and interact with each other, they build mutual understanding of knowledge structure (Dyer & Singh, 1998). This improves the firms' ability to evaluate the potential value of existing knowledge of the other firm (Junni et al., 2015; Vaara et al., 2012). Therefore, the integrated firms become willing and capable of sharing knowledge with each other.

Knowledge sharing is an effective method of deriving exploitation innovation. As an integrated acquiring and acquired firm share knowledge with each other, they can deepen existing knowledge (Prabhu et al., 2005) and effectively identify existing problems and solutions to them (Brown & Eisenhardt, 1995; Katila & Ahuja, 2002). The integrated firms equipped with deeper knowledge and advanced problem-solving capabilities can achieve exploitation innovation, improving the value of existing products such as the reduction of production cost and modification to product design (Brown & Eisenhardt, 1995). Therefore, knowledge sharing is advantageous to the integrated acquiring and acquired firm for realising economies of scale and adding value for existing customers and therefore generating exploitation innovation.

Collectively, at the heart of M&A success lie structural integration and exploitation innovation. Structural integration improves M&A and NPD performance through the realisation of exploitation innovation. Exploitation innovation extracts performance gains from structural integration. Underlying the relationship between structural integration and exploitation innovation, knowledge-based mechanisms exist. Knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing enable exploitation innovation from structural integration. Therefore, structural integration is a right choice for improvements in M&A and NPD performance. Structural integration is an appropriate form of post-acquisition structure for exploitation innovation, permitting an acquiring firm to transfer its knowledge resources to an acquired firm and share knowledge with each other. In order for a post-acquisition mechanism of M&A success to be better understood, it is important to examine the role of post-acquisition innovation as a mediator in the relationships between structural integration and M&A and NPD performance. Moreover, knowledge-based explanations about the realisation of exploitation innovation provide richer understanding of the role of structural integration in leading to post-acquisition innovation.

In contrast to the significant role of structural integration as an antecedent to exploitation innovation and M&A and NPD performance, it was observed that autonomy affected neither M&A performance nor NPD performance via the mediating variable of exploration innovation. Moreover, autonomy affected exploration innovation via neither knowledge transfer nor knowledge sharing. This study interpreted the insignificant mediating roles of exploration innovation, knowledge transfer, and knowledge sharing in cross-border M&As adopting autonomy in the following ways.

First, exploration innovation is a time-consuming process and a risky investment strategy (March, 1991; Raisch & Birkinshaw, 2008). That is, it requires long-periods of time and considerable financial capital. On the other hand, this study is based on the sampling firms that recently purchased an acquired firm between 2012 and 2015. Taking into consideration the time span of the observations, it may be too early for the sampling firms to produce certain results from exploration innovation. Therefore, a long time lag between exploration innovation and its performance outcomes may hinder acquiring and acquired firms from reaping certain results from exploration innovation.

Second, an acquiring firm may grant autonomy to an acquired firm as they are in dissimilar industry (Datta & Grant, 1990). Because the acquiring firm is not unfamiliar with the acquired firm's business and operations, the acquiring firm cannot accurately identify the potential of the acquired firm's exploration projects (Hitt et al., 1996). Thus, the acquiring firm provides limited and less financial support for exploration innovation than would be needed (Hitt et al., 1996). As a result, the acquired firm engages in exploration innovation in an irregular pattern. Therefore, the outcomes of exploration innovation are uncertain within cross-border M&As where an acquired firm preserves autonomy.

Third, drawing from organisational learning theory, a firm develops its knowledge and resources in a certain area and further enhances them, engaging in that activity more frequently, which forms organisational routines (Gilbert, 2005; Nelson & Winter, 1982). As a firm refines and reinforces its knowledge and resources through the repetition of organisational routines, a firm bases its behaviour and activities on organisational routines and commits itself to organisational routines. Therefore, organisational actions are tightly aligned with routines. A firm carries out its activities based on how its knowledge and resources have been used. Therefore, organisational routines are an effective tool of increasing efficiency in decision-making, information-processing, and problem-solving (Amburgey & Miner, 1992; Lavie & Rosenkopf, 2006). While a firm internally bases its actions and strategy on routines, it lacks experience of exploration innovation, which needs new organisational routines deviated from old and established routines (Gilbert, 2005). Accordingly, a firm deeply embedded in organisational routines is little equipped with knowledge and capabilities that are needed in executing exploration-based activities (Hoang & Rothaermel, 2010). Therefore, an acquiring and acquired firm may not have requisite knowledge and capabilities that guide and support activities for exploration innovation. Therefore, there is no evidence on the realisation of exploration innovation.

Fourth, borrowing the mechanism of a temporal separation of exploitation and exploration innovation from organisational learning theory, a firm builds organisational routines adapted to both exploitation and exploration innovation and switches a strategic focus between exploitation innovation and exploration innovation (Lavie & Rosenkopf, 2006). Within cross-border M&As adopting autonomy, an acquiring firm is willing to respect the way that an acquired firm has operated and avoids its intervention in the acquired firm's decision-making processes (Hambrick & Cannella, 1993). Therefore, two autonomous firms may have few opportunities to work together and therefore be slow in building shared routines adapted to exploration innovation, which is a long-term investment and produces uncertain and more remote returns in time. From this point of view, it may take long time for an autonomous acquiring and acquired firm to build shared routines adapted to exploration innovation. It may be too early for the sampling firm that had completed M&As during the period between 2012 and 2015 to build shared organisational routines adapted to exploration innovation and realise exploration innovation.

Fifth, drawing from the efficiency perspective of M&As, an acquiring firm grants great autonomy to an acquired firm due to a lack of the potential for the advantages that structural integration can create (Seth, 1990). Therefore, within cross-border M&As adopting autonomy, an acquiring firm expects few knowledge-based advantages to be generated by knowledge transfer with an acquired firm. Therefore, autonomy may not necessarily facilitate knowledge transfer between an acquiring and acquired firm and therefore produce innovation.

Sixth, though an acquiring and acquired firm stay autonomous, redundancy between them still incurs cost and the acquiring firm divests redundancy on the acquired-firm side (Sears & Hoetker, 2014). The divestiture of redundant knowledge of the acquired firm can deteriorate its relative standing and lead to voluntary personnel loss (Hambrick & Cannella, 1993), which undermines the acquired firm's capability to share knowledge with the acquiring firm and innovate (Paruchuri et al., 2006).

Lastly, an acquiring firm may encourage an acquired firm to collaborate in sharing knowledge with the acquiring firm by granting autonomy to the acquired firm and improving its relative standing (Hambrick & Cannella, 1993). However, as the acquiring and acquired firm share knowledge, they accumulate common knowledge beyond its optimal levels, which can impair the capacity for exploration innovation (Sears & Hoetker, 2014).

By testing the innovation-based mediating mechanisms and the knowledge-based mediating mechanisms, this study contributed to four streams of existing knowledge and

literature on cross-border M&As. First, this study provided innovation-based explanations about a post-acquisition mechanism of M&A and NPD performance. Existing literature limits its focus on the direct effects of structural integration and autonomy on M&A performance from the efficiency perspective of M&As (Datta, 1991) and the relative-standing perspectives (Hambrick & Cannella, 1993). However, this study argued that post-acquisition structure guided firms towards appropriate post-acquisition conduct and this affected M&A outcomes, drawing from the principles behind the SCP paradigm (McWilliams & Smart, 1995), causal ambiguity about a post-acquisition process (Cording et al., 2008), and the mediation mechanisms of exploitation and exploration innovation (Gibson & Birkinshaw, 2004). Accordingly, this study hypothesised the effects of structural integration and autonomy on M&A and NPD performance through post-acquisition innovation. As a result, this study found that structural integration improved M&A and NPD performance through exploitation innovation. In other words, structural integration affected M&A outcomes not directly but in a mediating mechanism that improved post-acquisition innovation. Moreover, the choice of structural integration appropriate for exploitation innovation was essential for the achievement of M&A success. Therefore, the findings confirmed a need to develop mediating mechanisms explaining the relationships between structural integration and M&A outcomes. This study developed existing knowledge on structural integration as a pre-requisite for superior M&A and NPD performance. Thus, this study contributed to innovation-based understanding of the role of structural integration in leading to M&A and NPD performance and innovation-based explanations about a post-acquisition mechanism of M&A success.

Second, acknowledging post-acquisition innovation as the outcomes of knowledge transfer, sharing, and combination between an acquiring and acquired firm rather than knowledge itself, this study developed understanding of post-acquisition innovation within knowledge-based theory. Unlike the prediction that both structural integration and autonomy were the keys to unlocking knowledge-based advantages, this study found that only structural integration realised exploitation innovation through knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing. These findings showed that post-acquisition innovation rested on structural integration. Structural integration created knowledge-based advantages through knowledge-transfer activities and knowledge-sharing capabilities. Therefore, this study contributed to existing knowledge on knowledge-based explanations about the role of structural integration in leading to post-acquisition innovation and existing literature on post-acquisition innovation within knowledge-based theory.

Third, this study expanded post-acquisition innovation along exploitation innovation. Since March (1991) introduced the concepts of exploitation and exploration, an increasing number of literature on M&As apply the exploitation-exploration paradigm to an M&A context (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). They explain the realisation of exploitation and exploration innovation drawing from resource-based theory and organisational learning theory. However, the relevant literature little discusses M&A outcomes driven by the realisation of exploitation and exploration innovation (with the exception of Stettner and Lavie (2013)). Moreover, even though literature implicitly and explicitly assumes that knowledge-based activities and capabilities are on the basis of post-acquisition innovation (Bauer et al., 2016; Miozzo et al., 2016), it provides limited understanding of how knowledge-based activities and capabilities contribute to exploitation and exploration innovation (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013). Therefore, this study hypothesised post-acquisition innovation in the form of exploitation and exploration innovation and within knowledge-based theory.

This study observed that structural integration improved M&A and NPD performance through the realisation of exploitation innovation. Structural integration realised exploitation innovation through knowledge transfer from an acquiring firm to an acquired firm. These findings showed that exploitation innovation translated into performance outcomes from structural integration. Structural integration was an appropriate form of post-acquisition structure attuned to exploitation innovation. Offering a post-acquisition mechanism in which structural integration realised exploitation innovation and then improved M&A and NPD performance within knowledge-based theory, this study contributed to existing knowledge on innovation-based conditions for improvements in M&A and NPD performance and knowledge-based conditions for exploitation innovation within cross-border M&As.

Again, this study did not discuss the achievement of both exploitation and exploration innovation (i.e., organisational ambidexterity) based on previous arguments about limited organisational resources (Ho & Lu, 2015; Lavie et al., 2011; Voss & Voss, 2013). Previous literature argues that firms have limited organisational resources so that they have limited abilities to allocate them to two conflicting organisational systems and processes of exploitation and exploration innovation (Ho & Lu, 2015; Lavie et al., 2011). In support of these arguments, Stettner and Lavie (2013) provide evidence that firm performance driven by two different forms of innovation within M&As is poorer than firm performance driven by one consistent form of innovation within M&As. Moreover, staying this study focused on knowledge-based theory, this study did not discuss the achievement of both exploitation and

exploration, the logic behind which is built from organisational learning theory. Therefore, this study improved coherence in theoretical arguments.

Finally, this study provided evidence on NPD performance as a proxy for the performance of post-acquisition innovation and another dimension of M&A outcomes. Post-acquisition innovation is often perceived as a major motive for M&A participation (Desyllas & Hughes, 2008). However, there is a little discussion on how post-acquisition innovation is transformed into innovation performance (c.f., Chen et al., 2010; Colombo & Rabbiosi, 2014; Grimpe, 2007) and how exploitation and exploration innovation serve as mediators for triggering superior innovation performance. Based on the perception of NPD as an extension of post-acquisition innovation (Grimpe, 2007) and exploitation and exploration innovation (Atuahene-Gima & Murray, 2007; Mu, 2015; Tsinopoulos & Al-Zu'bi, 2014), this study investigated NPD performance as a dependent variable alongside M&A performance. This study argued that improvements in NPD performance were indicative of M&A success. As a result, this study found that structural integration was positively associated with NPD performance through exploitation innovation. It was interesting to observe that the findings of NPD performance were in line with those of M&A performance. Therefore, this study showed that structural integration and exploitation innovation were essential for superior NPD performance as they were for superior M&A performance. Moreover, assessing M&A outcomes by NPD performance, this study contributed to existing knowledge on M&A success from the perspective of NPD performance.

Taken together, this study shows that structural integration produces successful M&A and NPD performance through exploitation innovation. To this end, knowledge-based mechanisms exist for prospering exploitation innovation. Structural integration requires an acquiring firm to transfer its knowledge resources to an acquired firm and share knowledge with the acquired firm to realise exploitation innovation. Therefore, this study shows that structural integration is a determinant of M&A and NPD performance and an appropriate choice for exploitation innovation. Moreover, post-acquisition innovation is better understood within knowledge-based theory. Thus, this study contributes to existing knowledge on post-acquisition innovation from a knowledge-based perspective and M&A success from an innovation-based perspective.

7.3. Managerial Implications

There are several important practical implications for management to be drawn from the results of this study that should be considered in forming post-acquisition structure for the

effective implementation of post-acquisition, the realisation of innovation, and for achieving superior M&A outcomes.

First, structural integration is a key to successful M&A and NPD performance. In order for an acquiring and acquired firm to achieve superior M&A and NPD performance, it is important to achieve internal coherence across their functional operations. By aligning the organisational operations of an acquired firm with those of an acquiring firm, the firms can realise the following advantages.

1. Centralising an acquired firm's decision-making on market and operations into an acquiring firm, the firms can make fast decisions and take quick actions to existing problems. Quickly and efficiently responding to existing customers' demands, the integrated firms can serve existing product-market segments competitively.
2. Integrating the R&D functions of an acquired firm into an acquiring firm, the firms can share and reduce the risk of internal development of innovation and improve innovation outcomes without further investments. Specifically, purchasing and integrating a technology-based acquired firm can bring an acquiring firm to benefit from the acquired firm's advanced innovation capabilities.
3. Integrating the human resources and strategic formulation of an acquiring and acquired firm can contribute to the establishment of a shared identity and the reduction of conflicts and tension between acquiring and acquired employees. While the acquiring and acquired employees commit themselves to common goals and communicate with each other to fulfil the goals, they can build a sense of collective responsibility for tasks and promote an organisational climate of trust. Creating a caring environment where acquired employees are respected and well-treated by acquiring employees and a work environment where the acquiring and acquired employees support each other are essential for M&A success. Therefore, the combination of the human resources and strategic formulation across an acquiring and acquired firm can develop the firms into a cohesive entity.
4. Integrating the upstream and downstream value chain of an acquiring and acquired firm, the firms can streamline production and find opportunities to add value to existing products. For example, a marketing team efficiently identifies current customers and markets' needs and wants from customer feedback, the information of which is shared with an acquiring firm's and an acquired firm's R&D and

manufacturing teams. Then the R&D and manufacturing teams collaborate in developing new technology that can reduce production costs and improve the value of existing products. Therefore, structural integration can improve the productivity of existing knowledge and resources of an acquiring and acquired firm and effectively allocate them to existing problems. Through the realisation of cost-saving effects on production and efficient problem-solving, the integrated firms can be more efficient and responsive to existing customers' demands and produce superior M&A performance.

5. Structural integration is beneficial to NPD. Building from existing operations, knowledge, and resources, the integrated acquiring and acquired firm can facilitate economies scale and the refinement and modification of existing products. The integrated acquiring and acquired firm equipped with operational efficiency can reduce cost and time in NPD and facilitate problem-solving in NPD. Producing quality, diverse, new products, the integrated firms can achieve successful NPD performance.

Taken together, M&A success is driven by increases in operational efficiency. Structural integration is a powerful means of improving operational efficiency, facilitating exploitation innovation and therefore improving M&A and NPD performance. Thus, an acquiring firm should consider structural integration as a pre-requisite for M&A success.

Second, knowledge transfer from an acquiring firm to an acquired firm is a method of translating from the benefits that structural integration creates into performance outcomes. That is, integrating an acquired firm, an acquiring firm can impose its organisational systems and processes on the acquired firm and effectively transfer its knowledge sources embedded in the organisational systems and processes to the acquired firm. By replicating the acquiring firm's knowledge resources in the acquired firm and aligning them with the knowledge and resources of the acquired firm, the firms can remove redundancy and improve operational efficiency. Allocating existing knowledge and resources to where they can be more productively used and organising an efficient process of solution search, the firms can streamline value chain and effectively identify requirements for modification of existing products. Achieving economies of scale and upgrading existing products, the acquiring and acquired firm can generate exploitation innovation. In order to realise the advantages of knowledge transfer, the acquiring firm should take the following three actions.

1. Transferring an acquiring firm's advanced technology to an acquired firm and combining it with the acquired firm's country-specific advantages such as cheap capital and firm-specific advantages such as market capabilities, the firms can cut down manufacturing costs and manufacturing investments.
2. Transferring an acquiring firm's administrative knowledge resources to an acquired firm and replicating them in the acquired firm, they firms can organise an efficient process of problem-solving. Thus, the integrated firms can have an efficient and accurate interpretation of existing problems, which helps the firm to arrive at optimal solutions among a verity of ideas and improve their abilities to seize the perceived market and technology opportunities.
3. Sending an acquiring firm's expatriate manages and transferring them to key positions in an acquired firm, the acquiring firm can exercise tight control on the one hand but ensure effective communication with the acquired firm. Because a firm's competitive advantage is held by individuals, the process of knowledge transfer is often accompanied with the transfer of expatriate managers. The use of an acquiring firm's expatriate managers can contribute to the effective transfer of the firm's experience-based competitive advantage to an acquired firm and the alignment of corporate objectives and practices.

In order for an acquiring firm to achieve M&A success through exploitation innovation, it should use structural integration as a means of transferring its knowledge resources to an acquired firm and applying them to exploitation-based activities.

Although knowledge transfer from an acquiring firm to an acquired firm within cross-border M&As of structural integration contributes to the realisation of exploitation innovation, knowledge transfer from an acquired firm to an acquiring firm in cross-border M&As adopting structural integration has no impact on exploitation innovation. This may be because of a time-consuming and costly process of assimilating the knowledge resources of an acquired firm from an institutionally distant country and applying them to exploitation-based activities. Organisational resources are embedded in a firm's social and national context in which knowledge is shared and created within a firm. Thus, it is likely for an acquiring firm to lack its understanding of the knowledge resources developed in an acquired firm from an institutionally distant country. While the acquiring firm finds it difficult and uncertain to absorb and leverage the knowledge resources of the acquired firm, exploitation innovation, for which new solutions in areas closely related to existing knowledge bases need to be immediately

used, can be disturbed. Therefore, it is not recommended that an acquiring firm seeks an acquired firm's knowledge resources with the desire to realise exploitation innovation. Therefore, an acquiring firm should go through thorough target selection.

In cross-border M&As seeking exploitation innovation, increases in operational efficiency is the most recognised and desirable advantage. Accordingly, an acquiring firm should investigate a potential acquired firm's strategic and operational knowledge and resources in advance and select an acquired firm that can maximise the value of the knowledge resources transferred from the acquiring firm and bring about knowledge synergies. For example, an acquired firm with a good deal of tangible resources such as cheap capital indicates excess capacity to manufacture products on a scale. Moreover, an acquired firm with well-established local brands and salesforces indicates that it has advanced marketing capabilities and knowledge on local customers, competitors, and distribution systems. Leveraging the acquired firm's advanced marketing capabilities, the acquiring firm can produce products tailored to local customers and meet their demands. Therefore, it is important to purchase an acquired firm with excess manufacturing capacity and advanced marketing capabilities to achieve operational efficiency and realise exploitation innovation.

Lastly, an acquiring and acquired firm's capability to share knowledge contributes to the realisation of exploitation innovation. In addition to the strategic focus on the transfer of an acquiring firm's knowledge resources to an acquired firm, the acquiring firm should attempt to improve its acquiring and acquired employees' capability to share knowledge with each other. By combining the functional activities of an acquired firm into the operations of an acquiring firm, they can promote an organisational climate of a shared identity and improve an ability to evaluate the potential for synergy benefits. Therefore, structural integration encourages an acquiring and acquired firm to share knowledge with each other. As the integrated acquiring and acquired firm collaborate in sharing knowledge with each other, they have access to a diverse pool of knowledge of a partner firm and fill the complementary weakness in the area where they are relatively weak. Therefore, the firms can deepen existing knowledge bases and have better understanding of existing products and customers, which contributes to the advancement of problem-solving and searching capabilities. Solving existing problems underlying the downstream activities of the value chain such as underperforming production, market mismatch, and product design, the acquiring and acquired firm can improve economies of scale and achieve incremental improvements in existing products. Therefore, an acquiring firm should consider integrating an acquired firm as a means of prospering knowledge sharing with the acquired firm if it plans to reap successful M&As through exploitation innovation.

Aligned with this then, managers must ensure procedures are in place to encourage and maximise knowledge sharing across organisational and departmental level boundaries. In so doing, knowledge sharing can be centralised in the culture of the combined firm so that it becomes an expected norm and not an accidental occurrence or on the insistence of senior management. This is vital if exploitation innovation is the firm's strategic basis for competing.

In contrast, autonomy is found to be insignificant in any of the hypotheses developed in this study. This does not mean that autonomy has little to do with cross-border M&A success as a determinant, but imply that autonomy is not sufficient alone to realise exploration innovation and subsequently determines M&A and NPD performance. For managers, pursuing exploration innovation must come with the realisation that performance gains/benefits will take time to translate thorough onto the balance sheet as the findings imply no performance effect on current, near-term, performance. Therefore, caution must be applied when an acquiring firm grants autonomy to its acquired firm because the effects of autonomy on innovation and M&A outcomes are absent. The results of autonomy point to several promising applications for future research though. I will further discuss this in Section 7.4.2 and 7.4.3. Managers must be wary of providing autonomy in any M&A deal that is cross-border in nature. As it stands, we lack a complete understanding of how this works and how to derive performance benefits from this structuring method. In granting autonomy, managers sacrifice control relative to the choice of pursuing autonomy. For the short-to-medium term, any decisions to pursue autonomy should also be backed up by a control and monitoring process to ensure that (a) synergies are being developed, (b) the acquired firm in acting and performing to our expectations as the acquiring firm, and (c) if change is needed that the acquiring firm is in a position to move rapidly on this with knowledge of the situation at hand.

In summary, an acquiring firm seeking exploitation innovation should consider integrating its acquired firm. Under structural integration, an acquiring firm can effectively transfer its knowledge resources to an acquired firm and encourage acquired employees to share knowledge with the acquiring firm, which in turn triggers exploitation innovation. The integrated firms make their knowledge-based commitment to realising exploitation innovation. This will produce superior M&A and NPD performance. Thus, structural integration is appropriate post-acquisition structure attuned to exploitation innovation and a pre-requisite for successful M&A and NPD performance.

7.4. Limitations and Future Research

This study is not without limitations. Pointing out six methodological limitations and six theoretical limitations inherent in this study, I offer a note of caution in interpreting the findings and implications of this study and suggest directions for future research.

7.4.1. Methodological Limitations and Future Research

The first methodological limitation of this study is reliance on a single method. I applied quantitative methodology and a survey method because quantitative and qualitative methodology represents fundamentally different roles of philosophical paradigms (Guba & Lincoln, 1994; Silverman, 1985; Smith & Heshusius, 1986). I conceived quantitative methodology as the only research that developed generalizable findings from a sample to a population and contributed to only research that conformed to the tenet of scientific methods (Bryman, 1988). Further, I employed a survey method in this study owing to the following two practical barriers to the mix of both quantitative and qualitative methodology. First, there are limited rules or guidelines about the use of mixed methods in terms of purposes, design, measurement, analysis, and the interpretation and combination of findings (Bryman, 1988; 2008; Kaplan & Duchon, 1988; Kopinak, 1999). Although a number of textbooks on social research methods are available, few of them offers a helpful guide to the actual conduct of research on how, when, and why different research methods might be used together (Bryman, 1988). Second, limited resources such as time and finances for study design, data collection, and data analysis discouraged me from conducting two research methods (Bryman, 1988; Kopinak, 1999). That is, the mixed use of two different research methods would require considerable amounts of time for preparing instruments, securing methodological expertise in them, and analysing a larger volume of data (Kopinak, 1999). In a similar vein, a study basing its methodology on two different methods would require substantial amounts of finances (Bryman, 1988). For these reasons, existing literature on M&As tended to be funded projects (Colombo & Rabbiosi, 2014) or completed by a team of researchers (Cording et al., 2008). Taking these practical issues into account, this study relied on quantitative methodology and a survey method.

In spite of the justification for the reliance on a single method, there has been a trend towards the mix of quantitative and qualitative methodology and methods across studies on M&As (Allatta & Singh, 2011; Bresman et al., 2010; Kim & Finkelstein, 2009). The studies carry out a quantitative method as the principal means of data collection and a qualitative method as a complementary method to effectively assist the principal one (Allatta & Singh, 2011; Kim

& Finkelstein, 2009) or use two different research methods simultaneously (Bresman et al., 2010). For example, Allatta and Singh (2011) and Kim and Finkelstein (2009) base their analysis significantly on a survey and use an interview as a complementary tool providing richer understanding of what they find from the survey results and giving account of any potential gaps between their theory and results. Bresman et al. (2010) conduct a survey to develop knowledge on an acquired firm's perception of its M&A and employ interviews to learn the flows of knowledge transfer at different stages. From this point of view, there would be value in future studies that conduct both qualitative and quantitative research methods and give richer insights into post-acquisition and maximise validity and generalisability at the same time (Bresman et al., 2010).

The second methodological limitation of this study is related with the cross-sectional nature of a survey. I measured at one particular point in time by means of a cross-sectional survey with the assumptions that post-acquisition was quite stable over time. However, post-acquisition can be seen as complex and multi-faceted nature. Some existing studies on cross-border M&As attempt to untangle M&A dynamics by using longitudinal studies (Bresman et al., 2010). For example, Bresman et al. (2010) collect data at an interval of five years to examine the flows of knowledge transfer from either an acquiring firm or an acquired firm to the other firm in accordance with time elapsed since M&A completion. They find that knowledge transfer is limited from an acquiring to an acquired firm during the first two and three years of a post-acquisition process. Knowledge transfer occurs in both directions from/to the acquiring firm to/from the acquired firm as they enter the three-to-six year stages of the post-acquisition process. Thus, the cross-sectional survey might not give as thorough investigation on post-acquisition and knowledge-based activities as I planned. Accordingly, this indicates a scope for the use of longitudinal studies on post-acquisition for better theory testing and understanding of complex post-acquisition phenomena.

The third methodological limitation of this study is in its reliance on an acquiring firm's view of cross-border M&As. Along with the following limitation of adopting a dyadic view on both an acquiring firm and an acquired firm, a great deal of existing literature on M&As collect data from one side of either an acquiring firm (Datta & Grant, 1990; Schoenberg, 2004) or an acquired firm (Very et al., 1997; Zueva-Owens et al., 2011) and the same as in this study. The adoption of a dyadic view was frustrated by restriction on access to information on an acquired-firm side. Moreover, existing literature collects data from an acquiring firm, taking into consideration its dominant role in M&A activities. However, it is obvious that M&As are subject to the participation of both an acquiring and an acquired firm. Trends towards data

collection of both sides become emerging among recent literature (Graebner, 2009; Hajro, 2015). Although the data offered by the respondent firms for this study reflects the performance of their acquired firm, it is inevitable that this study might provide limited insights into an acquired firm's ability to bring post-acquisition to be prospered and its perspective on M&A outcomes. Accordingly, future research has great potential for providing better insights on post-acquisition issues, taking the viewpoints of both of an acquiring firm and an acquired firm.

The fourth methodological limitation of this study resides in the questions of the generalisability of time frames. I targeted recent cross-border M&As that were completed specifically between January 2012 and July 2015. However, according to Bresman et al. (2010), it will take at least three years to bring about stable advantages to both acquiring and acquired firms after M&A completion (Bresman et al., 2010). During the early stage of M&As, which is defined as the first two or three years after M&A deals are completed, they might be still in progress and not produce any significant outcomes for both acquiring and acquired firms at the time of data collection. Therefore, future research could expand time span and incorporate samples that stabilise their post-acquisition process and improve the generalisation of research findings.

The fifth methodological limitation of this study is related to the possibility for comment method bias. This study relied on the subjective measures of M&A performance reported by respondents because of difficulties in obtaining objective data from small and private firms and capturing the true economic outcomes of an M&A event from objective data. However, because objective measures are majorly shaped by external factors and informants such as market reactions, investors, and analysts, who are beyond a firm's control (Haslam et al., 2010), they are believed to reflect the 'real' world with minimal discretion (Boyne, 2006). Accordingly, objective measures of performance are dominantly employed in previous literature (Almor et al., 2014; Anand & Singh, 1997). Objective measures are used as the criterion against which to judge the validity of subjective measures with the assumption that objective measures themselves are valid (Dess & Robinson, 1984).

By contrast, subjective measures, which are based on subjective measurements of performance by members of an organisation, may involve the danger of common method bias (Podsakoff et al., 2003). The performance measures may be interpreted and perceived differently by different managers although they are from the same firm. Consistent with this, previous literature shows that subjective and objective measures are not statistically

significant and suggests that they should be not used interchangeably (Heneman, 1986). For this reason, there is a tendency towards the reliance on solely objective measures (Chatterjee et al., 1992; Ellis et al., 2011) or the mixed use of multiple items of subjective measures and a single item of objective measures (i.e., cumulative abnormal returns) (Ambrosini et al., 2011; Reus & Lamont, 2009).

This study used the multiple items of M&A and NPD performance measures from the same source without any objective measures of the performance effects, which involves the possibility of common method bias. Though this study is certain that common method bias is unlikely to occur and affects our results due to ex ante procedural remedies applied during the design of survey questions (Chapter 4 Section 4.3.1.3) and ex post statistical remedies applied after data collection (Chapter 5 Section 5.2.3), some of our findings should be interpreted with caution. Future research incorporating both subjective measures and objective measures of performance can remove the concern about the possibility for common method bias.

The last methodological limitation of this study involves a potential level-of-analysis problem. Because of restriction on access to information on an acquired-firm side, a great deal of existing literature on M&As collect data from one side of either an acquiring firm (Datta & Grant, 1990; Schoenberg, 2004) or an acquired firm (Very et al., 1997; Zueva-Owens et al., 2011). In line with this trend, this study also relied on an acquiring firm's view of cross-border M&As, taking into consideration its dominant role in M&A activities such as exploitation and exploration innovation (Phene et al., 2012) and knowledge transfer and sharing (Capron, 1999; Park & Choi, 2014).

This study argues that an acquiring firm uses an acquired firm as a means of realising exploitation innovation or exploration innovation and realises them in collaboration with the acquired firm. Based on this argument, this study relied on an acquiring firm as the source of information on the relevant innovation activities. However, the possibility that an acquired firm may have different views on exploitation and exploration innovation cannot be excluded.

According to knowledge-based theory, the major agents of knowledge transfer and sharing are employees so that it is their motivation and ability that determine the knowledge-based behaviour and capability (Grant, 1996a). From this point of view, it can be arguable whether an acquiring firm is the eligible informants about knowledge transfer and sharing held by lower-level employees. It is possible that an acquiring firm may lack knowledge on knowledge transfer and sharing between acquiring and acquired employees. In a similar vein,

this study could provide limited insights into knowledge transfer and sharing between an acquiring and acquired firm. Based on the assumption that an acquiring and an acquired firm have shared perspective on the amount and kind of knowledge transferred each other, this study argues that an acquiring firm can accurately capture knowledge transfer activities with an acquired firm. Moreover, based on the assumption that an acquiring firm attends to acquired employees' emotions and take into great consideration their reaction to the M&A (Larsson & Finkelstein, 1999; Reus, 2012), this study argues that they can accurately capture an acquired firm's wiliness and capabilities to share knowledge. However, human assets cannot be controlled like tangible resources such as equipment and technologies (Kiesling et al., 2012). Without direct evidence on knowledge transfer and sharing from the perspective of an acquired firm, it may be difficult to claim that an acquiring firm is the precise representatives of an acquired firm. This seems more distinguishable in the situation where an acquired firm is free from an acquiring firm's control. Taken together, future research has great potential for providing better insights on exploitation and exploration innovation and knowledge transfer and sharing within M&A contexts, taking the viewpoints of both of an acquiring firm and an acquired firm and their respective employees.

7.4.2. Theoretical Limitations and Future Research

There are six theoretical limitations needed to be considered. First, this study did not test the interaction between structural integration and autonomy. In line with post-acquisition typologies suggested by Haspeslagh and Jemison (1991), this study conceptualised post-acquisition structure as structural integration and autonomy and argued that structural integration and autonomy were two differing structural choices that an acquiring firm considered and strategically decided. That is, this study did not consider the possibility that structural integration and autonomy coexisted. However, some studies argue that some degrees of both structural integration and autonomy are necessary for an acquiring and acquired firm to achieve M&A success and provide evidence on the co-existence of structural integration and autonomy (Angwin & Meadows, 2015; Datta, 1991; Zaheer et al., 2013). For example, Datta (1991) find that an acquired firm is not totally free from control by an acquiring firm, although the acquired firm stays independent of the acquiring firm and enjoys great autonomy. The acquired firm is likely to follow management styles, organisational systems, and culture imposed by the acquiring firm, during which the acquired firm still encounters status changes and a degree of dominance (Lubatkin et al., 1999). In other words, structural integration and autonomy may be not separated but come together. The failure to provide evidence on the role of autonomy as post-acquisition structure in this study may be related

with the arguments about the co-existence of structural integration and autonomy. In this sense, the issue of to what extent an acquiring firm integrates an acquired firm and grants autonomy to the acquired firm at the same time needs to be considered in future literature.

Second, this study was restricted to structural integration and autonomy that represented the operational dimensions of post-acquisition structure and an acquiring firm's control exercised over an acquired firm. This study argued that the post-acquisition structures of structural integration and autonomy were central to the issues of post-acquisition and M&A success. However, according to a process perspective, structural integration and autonomy are not sufficient conditions for understanding post-acquisition. M&As become successful when acquired employees express positive and coordinative attitudes towards post-acquisition (Larsson & Finkelstein, 1999). Post-acquisition could be impeded by a lack of support from acquired employees (Cartwright & Cooper, 1990). Thus, it is important for a study discussing post-acquisition to take into consideration the integration of human dimensions and how support from acquired employees affects the quality of post-acquisition implementation.

Without direct evidence of the integration of human dimensions, this study argued that structural integration was a means of building a shared identity. However, according to Birkinshaw et al. (2000), structural integration is characterised as hasty and forceful, leading an acquiring firm to encounter hostile attitudes of their acquired employees and see voluntary personnel loss. Under structural integration, an acquiring firm can encounter significant obstacles to post-acquisition, having it stalled or delayed at the beginning of the process. When structural integration is resumed and gets vigour again, it is by the time when acquired employees are nearly integrated into the acquiring firm. From this point of view, it is suggested that the integration of human dimensions complements structural integration and promotes effective post-acquisition implementation. Future research can discuss the integration of human dimensions alongside structural integration and autonomy and their effects on M&A outcomes.

Third, this study gave limited insights into organisational ambidexterity within cross-border M&As. Organisational ambidexterity is a balance approach of pursuing both exploitation innovation to meet demands emerging from existing customers and markets and exploration innovation to meet demands emerging from new customers and markets (March, 1991). According to organisational learning theory, an ambidextrous firm engaging in exploitation innovation on the one hand but exploration innovation on the other hand can sustain competitive advantage and achieve organisational success (March, 1991). That is, the

preponderance of either exploitation innovation or exploration innovation is not desirable, but a balance between them is highlighted for firm growth and survival. Following the logic behind organisational ambidexterity within organisational learning theory, some studies on M&As investigate the achievement of organisational ambidexterity between an acquiring and acquired firm (Miozzo et al., 2016). However, this study argued that an acquiring and acquired firm were focused on either exploitation innovation or exploration innovation due to their limited organisational resources (Voss & Voss, 2013) and conflicting requirements for exploitation and exploration innovation (Ho & Lu, 2015; Lavie et al., 2011) and did not discuss and test organisational ambidexterity. Exploring organisational ambidexterity within a cross-border M&A context, future research can discuss the conditions under which organisational ambidexterity is achieved within knowledge-based theory and offer insights into no evidence of exploration innovation found in this study.

Fourth, M&As types – related M&As and unrelated M&As - may be an important consideration in enlightening about knowledge-based mechanisms and innovation-based mechanisms across an acquiring and acquired firm. Within related M&As, where an acquiring and an acquired firm are direct competitors within the same industry (i.e., horizontal M&As) or a potential buyer-seller relation prior to the M&As (i.e., vertical M&As), the acquiring and acquired firm show certain levels of relatedness in their business (Harrison et al., 1991; Ramaswamy, 1997). Because relatedness indicates redundancy on the one hand but the source of operational efficiency on the other hand (Datta, 1991), within related M&As structural integration is often chosen as the key to unlocking the potential for the relatedness between an acquiring and an acquired firm (Lin, 2014). Without direct evidence on related M&As, this study assumed that an acquiring and acquired firm that chose structural integration had certain levels of relatedness and benefited from the advantages that the relatedness brought about.

In addition to the understanding of relatedness from the efficiency-based perspective, relatedness functions as a firm's ability to "recogni[s]e the value of new information, assimilate it, and apply it to commercial ends" or absorptive capacity (Cohen & Levinthal, 1990, p. 128). Because organisational learning is facilitated by prior related knowledge in that specific knowledge area, an ability to exploit the knowledge of a partner firm is dependent on the existence of its prior related knowledge or absorptive capacity (Cohen & Levinthal, 1990). Within related M&As where an acquiring and acquired firm have absorptive capacity each other, they better evaluate and understand the potential value of the knowledge of the other

firm and commercially applies it (Cohen & Levinthal, 1990; Lane & Lubatkin, 1998). Accordingly, the transfer and sharing of related knowledge is much easier and the recipient can easily understand and absorb the newly acquired knowledge within related M&As (Capron et al., 2001; Finkelstein & Halebian, 2002).

In a similar vein, relatedness improves a firm's ability to identify the deficits of its current knowledge and capabilities (Zahra et al., 2000; Cohen & Levinthal, 1990). Depending on the extent to which an acquiring and an acquired firm are related, the direction of their innovation activities differs (Desyllas & Hughes, 2010; Makri et al., 2010; Miozzo et al., 2016). Within related M&As where a large portion of an acquired firm's knowledge is related to that of an acquiring firm, the firms effectively identify complementary weaknesses in the neighbourhood of their existing knowledge sets and acquire the knowledge of an partner firm that can fills the weaknesses (Prabhu et al., 2005). As a result, the related acquiring and acquired firm can improve their existing knowledge sets and increase productivity through the efficient use of their existing knowledge and resources (Capron et al., 1998). In contrast, within related M&As where a small portion of an acquired firm's knowledge is related to that of an acquiring firm, the firms identify the opportunities for novel combinations of different and complementary knowledge, which comes to improvement in knowledge breadth and breakthrough innovations (Prabhu et al., 2005; Sears & Hoetker, 2014). Thus, a high level of relatedness contributes to productive R&D (Desyllas & Hughes, 2010) and exploitation innovation (Miozzo et al., 2016), while a low level of relatedness between them contribute to innovation novelty (Makri et al., 2010) and exploration innovation (Miozzo et al., 2016).

Taken together, without taking into consideration the M&A type that an acquiring and acquired firm participate in, this study may give limited insights into the knowledge-based activities and capabilities across an acquiring and acquired firm and their post-acquisition innovation driven by the choice of structural integration. In particular, this study found the hypothesis on the mediator of knowledge transfer from an acquired firm to an acquiring firm in the relationship between structural integration and exploitation innovation statistically insignificant. Moreover, this study developed knowledge sharing between an integrated acquiring and acquired firm partially around their absorptive capacity. Future research with direct evidence on related M&As can provide better insights into the results of knowledge transfer from an acquired firm to an acquiring firm and the arguments about knowledge sharing based on the perspective of absorptive capacity.

Unrelated M&As, which are the combination of two essentially unrelated firms, may need a post-acquisition mechanism of M&A success different from related M&As. Investing in unrelated business, an acquiring firm can spread the unsystematic risk of a company's investment portfolio (Trautwein, 1990; Hisey & Caves, 1985). Diversifying investment portfolios across different markets, an acquiring can reduce systematic risk involved with changes in exchange rates and monetary and fiscal policies across markets (Lubatkin & Chatterjee, 1994; Seth et al., 2002). Because of little intention to create synergy and knowledge-based advantages within unrelated M&As, they are often accompanied with the choice of autonomy (Datta & Grant, 1990). Therefore, unrelated M&As are synergy-capture strategy rather than synergy-creation strategy from the diversification perspective (Angwin & Meadows, 2015). This study does not consider the situation where autonomy is chosen to benefit from the diversification advantages, but argue that autonomy can be another choice of post-acquisition structure to realise strategic opportunities to create synergy from a relative-standing perspective (Hambrick & Cannella, 1993). Nevertheless, this study found no evidence on autonomy as a determinant of knowledge transfer and sharing and M&A outcomes. The findings may be related with the failure to understand the logics behind the choice of autonomy and post-acquisition activities within unrelated M&As.

In contrast to unrelated M&As as a risk-spreading strategy from the diversification perspective, purchasing an acquired firm within different industry offers an acquiring firm with non-overlapping knowledge and resources (Anand & Singh, 1997). According to resource-based theory, sustainable competitive advantage of a firm is attributable to the possession of private, valuable, and non-imitable assets (Barney, 1991). In order for a firm to have competitive advantage in rapidly changing and competitive environments, the acquisition of non-overlapping knowledge and resources that complement existing capabilities is vital for long-standing survival (Cassiman et al., 2005; Miozzo et al., 2016). Combining non-overlapping assets of an acquiring or an acquired firm into the other firm's existing knowledge stocks can give rise to new and breakthrough invention (Atuahene-Gima & Murray, 2007). From this point of view, unrelated M&As may be an important contingency factor needed to take into consideration the environment in which exploration innovation is driven. That is, without the recognition of unrelated M&As, autonomy may be not a sufficient condition for exploration innovation. In line with this argument, the statistically insignificant hypotheses regarding exploration innovation may indicate the need to provide explanations about the effects of unrelated M&As on exploration innovation.

Taken together, this study did not clarify M&A types in the sample and take into consideration their effects in developing the post-acquisition mechanism of M&A success. The failure to specify if an M&A event is related or unrelated limits our understanding of the logic behind the choice of structural integration and autonomy and the knowledge-based and innovation-based mechanisms developed afterwards. Specifically, how knowledge transfer from an acquiring firm to an acquired firm contributes to post-acquisition innovation within structural integration may be better understood by the relatedness between the acquiring and acquired firm. Moreover, previous literature indicates that exploration innovation results from certain levels of relatedness (Makri et al., 2010; Miozzo et al., 2016) or non-overlap between an acquiring and an acquired firm (Atuahene-Gima & Murray, 2007). That is, the clarification of M&A types could be an important consideration for studying exploration innovation. Collectively, future research on how M&As types affect the choice of post-acquisition structure and how this affects M&A outcomes from the knowledge-based perspective and the innovation-based perspective is suggested.

Fifth, no detailed explanations about the country of origin of an acquiring and an acquired firm are given. This may limit our understanding of the nature of post-acquisition innovation created across an acquiring and acquired firm. Because country-specific advantages tend to be location-bound (Anand & Delios, 2002), cross-border M&As where either (or both) an acquiring firm or (and) an acquired firm are from developing countries enable the access to the partner firm's country-specific advantages. Because country-specific advantages such as rich natural resources, cheap labour cost and land, and large market size are the source of cost saving, operational efficiency, and economies of scale (Bertrand & Capron, 2015), cross-border M&As based on developing countries can facilitate exploitation innovation. In contrast, cross-border M&As where either (or both) an acquiring firm or (and) an acquired firm are from developed countries offer an opportunity to acquire the partner firm's advanced technology and R&D capabilities embedded in its home country expertise (Anand & Delios, 2002; Bertrand, 2009). The exploration of new and advanced knowledge of an acquiring or an acquire firm in a developed country can contribute to their exploration innovation activities (Desyllas & Hughes, 2008). That is, cross-border M&As completed between an acquiring and an acquired firm from developing countries or from developing and developed countries may suggest the potential for exploitation innovation. On the contrary, cross-border M&As completed between firms from developed countries or from developing and developed countries may offer opportunities to realise exploration innovation. Accordingly, it may be worthwhile to

investigate the country-level conditions for exploitation and exploration innovation within cross-border M&As (Rabbiosi et al., 2012).

Finally, this study insisted in knowledge-based constructs as mediators of the effects of post-acquisition structure on innovation rather than on M&A outcomes because I did not find any compelling knowledge-based arguments for the relationships between knowledge transfer and knowledge sharing and M&A outcomes. According to knowledge-based theory, firms develop new knowledge important to competitive advantage through knowledge transfer and knowledge sharing (Fleming, 2001). In a similar vein, Capron (1999) argues that transfer activities are a process of organisational adaptation and organisational learning improving revenue-based capabilities such as innovation and producing M&A performance in the end. In other words, knowledge transfer and knowledge sharing are organisational capabilities producing firm performance through the creation of competitive advantages. Knowledge transfer and knowledge sharing between an acquiring and an acquired firm are the causes of capability enhancement rather than the direct causes of M&A outcomes.

In line with previous study by Reus et al. (2016) investigating the path from knowledge transfer to M&A performance within organisational learning theory, I could have developed the framework of post-acquisition within organisational learning theory and hypothesised the mediating effects of knowledge transfer and knowledge sharing in the relationships between post-acquisition structure and M&A outcomes. However, this study sought to develop a post-acquisition mechanism in which post-acquisition structure affected post-acquisition innovation and then post-acquisition outcomes within knowledge-based theory. Developing the hypothesised model based on another theoretical foundation would widen the scope of the present study and therefore weaken coherence in theoretical arguments. From this point of view, future research can discuss post-acquisition within organisational learning theory and provide organisational learning arguments about how knowledge transfer and knowledge sharing translate into M&A and NPD performance from post-acquisition structure.

7.4.3. Future Research Arising from the Results

The results relating to autonomy need further investigation. The context of this study focused on cross-border M&As and this differs from many studies in this area that focus on general inter-domestic M&As. Accordingly, it may well be the case that the findings are context-specific and autonomy is less useful in this setting for generating success and exploration innovation. This notwithstanding however, a more detailed examination in to autonomy and then means to achieve success through it is required. Given the results, it is

very likely that intervening moderator or mediating mechanisms exist to explain how autonomy can lead to greater performance. Further knowledge-based and resource-based constructs should be examined as a first step.

7.5. Conclusion of the Research

Perceiving structural integration and autonomy as a context in which an acquiring and acquired firm shape post-acquisition conduct and produce M&A outcomes, this study insisted on building mediating mechanisms of the relationships between structural integration and autonomy and M&A outcomes (Cording et al., 2008). Perceiving post-acquisition innovation as the keys to unlocking performance, this study claimed that post-acquisition innovation was a mediatory cause of M&A outcomes. Therefore, this study developed and tested innovation-based mediating mechanisms in which the post-acquisition structures of structural integration and autonomy affected M&A and NPD performance through post-acquisition innovation.

Post-acquisition innovation rests on the creation of knowledge-based advantages through knowledge-transfer activities and knowledge-sharing capabilities. However, existing literature on post-acquisition innovation is limited to resource-based theory (Cassiman et al., 2005) and organisational learning theory (Ahuja & Katila, 2001; Desyllas & Hughes, 2010). Without considering the knowledge-based commitment of an acquiring and acquired firm to post-acquisition innovation, our understanding of post-acquisition innovation arising from structural integration and autonomy is limited. Therefore, this study identified a need to develop understanding of post-acquisition innovation within knowledge-based theory.

Although March's (1991) exploitation and exploration paradigm is widely accepted by literature on M&As (Angwin & Meadows, 2015; Miozzo et al., 2016; Phene et al., 2012; Stettner & Lavie, 2013), it provides limited insights into the effects of exploitation and exploration innovation on M&A outcomes and the knowledge-based conditions for the realisation of exploitation and exploration innovation. Accordingly, this study evolved post-acquisition innovation along exploitation and exploration innovation. Therefore, this study constructed knowledge-based mediating mechanism in which structural integration realised exploitation innovation, or autonomy realised exploration innovation, through knowledge transfer and knowledge sharing.

This study found that exploitation innovation positively mediated the relationships between structural integration and M&A and NPD performance. Moreover, knowledge transfer from an acquiring firm to an acquired firm and knowledge sharing positively mediated the relationship between structural integration and exploitation innovation. Integrating the

functional operations of an acquired firm into those of an acquiring firm, the firms can improve operational efficiency and arrange an efficient process of problem-solving. Manufacturing products on a scale and addressing existing problems that can be structured and easy to solve, the integrated firms can realise economies of scale and incrementally innovate existing products. Therefore, structural integration is an effective tool of realising exploitation innovation. It is an appropriate choice for exploitation innovation.

Meeting existing customers' demands and strengthening existing customer bases, an acquiring and acquired firm can consolidate market position and bring about economies benefits. Therefore, exploitation innovation is a mediatory cause of M&A performance. Moreover, exploitation innovation can be beneficial to NPD. Reducing errors, mistakes, and cost in NPD, exploitation innovation permits an acquiring and acquired firm to develop new product competitive advantages and produce quality and diverse new products that can preserve existing customers and sustain economic benefits. Thus, structural integration is a post-acquisition structure permitting an acquiring and acquired firm to realise exploitation innovation and then reap superior M&A and NPD performance. Taken together, for an acquiring firm, structural integration is a pre-requisite for successful cross-border M&As.

The relationship between structural integration and exploitation innovation can be better explained by knowledge-based mechanisms. Under structural integration, an acquiring firm can effectively transfer its knowledge resources to an acquired firm and motivate acquiring and acquired employees to share knowledge with each other. That is, integrating an acquired firm, an acquiring firm can impose its standardised systems and practices on the acquired firm, which enables the acquiring firm to transfer its knowledge resources to the acquired firm and exploits them in the acquired-firm setting. Replicating the acquiring firm's knowledge resources in the acquired firm and combining them with the knowledge and resources of the acquired firm, the integrated firms can productively use their existing knowledge and resources and arrange effective problem-solving. Therefore, under structural integration, knowledge transfer from an acquiring firm to an acquired firm contributes to increases in operational efficiency and problem solving, which are linked to exploitation innovation.

Under structural integration, an acquiring and acquired firm can build a shared identity and shared understanding of knowledge structure, which motivate and bring the firms to share knowledge with each other. As the integrated acquiring and acquired firm share knowledge, they develop deeper knowledge of existing problems and existing circumstances. Effectively

structuring upstream and downstream problems and discovering opportunities to refine existing products, the integrated firms can reduce manufacturing cost and refine and modify existing products. Thus, knowledge sharing translates into exploitation innovation from structural integration.

Taken together, by aligning the functional operations of an acquiring firm with those of an acquired firm, the acquiring firm can effectively transfer its knowledge resources to an acquired firm and share knowledge with the acquired firm, such that the firms improve their capabilities to realise exploitation innovation and then trigger superior M&A and NPD performance.

Despite structural integration lying at the heart of M&A success, autonomy was found to be insignificant in cross-border M&As seeking exploration innovation. The results pertaining autonomy imply that it is not subject to knowledge transfer and knowledge sharing nor sufficient to realise exploration innovation and M&A success. The results are quite unexpected and suggest an important issue for future research, specifically the role of autonomy in improving M&A and NPD performance and the conditions under which exploration innovation is driven within knowledge-based theory. Thus, the results of this study can provide a useful ground for future research to build a complementary theory of cross-border M&As adopting autonomy and seeking exploration innovation. Extending the results of this study, future research can fill the limitations of this study and give insights into the research findings of autonomy and exploration innovation. Consequently, future research can contribute to ongoing discussion on cross-border M&As.

Appendices

Appendices

Appendix 4.1: Pre-Notification, Cover Letter, and Reminders

4.1.1. Pre-Notification

Dear <<Name of Respondents>>
<<Firm Name>>
<<Address>>

Explaining Cross-Border Merger & Acquisition Success

I am Hanna Lee studying cross-border Mergers and Acquisitions (M&As), which are understood as the buying of a firm, assets, or properties in a geographically and psychically distant country in this research project, at Durham University Business School. As part of my PhD research, I am collecting data from senior managers of UK acquirers on their views about post-acquisition integration, knowledge sharing, and organisational performance following their most recent cross-border M&A. This research project is funded by Durham University Business School, and its findings will be published in a full report later this year, a copy of which will be freely available to you should you participate.

This research project will explain successful cross-border M&As. A downward trend where only one out of five firms succeeds in cross-border M&As and the rest fail to achieve their original purposes is observed. It is often reported that such a high rate of M&A failure is related to failure of post-acquisition integration and knowledge sharing between merger or acquisition partners. However, what factors lead to post-acquisition integration and how knowledge sharing can be organised to improve M&A performance remain shrouded in mystery. The research project will address: (1) how organisational conditions of an acquirer and institutions of the host country where its most recent cross-border M&A is located influence post-acquisition integration, and (2) how knowledge sharing between acquiring and acquired firms is associated with organisational and innovation performance. The research project will provide valuable, new knowledge on cross-border M&As, but its success depends on your participation.

Your firm has been selected in our small representative sample because you are a UK acquirer and purchased a non-UK firm with a 100% full equity stake. You will shortly be asked to provide information on a range of post-acquisition integration, knowledge sharing, and M&A performance. You have been chosen as the <<Position Title>> in your firm from which we need

information because your unique position qualifies you to provide the most reliable views. In order for us to compile a bank of evidence that is representative, it is vital that each survey is completed and returned by every <<Position Title>> to whom it is sent. You will shortly receive this survey and the task of completing it should take only a short time. Your completed survey will help us greatly in being able to fully research this area and your responses are vital to the accuracy of our research findings. We truly believe its findings will be important and useful to you.

Please be assured that individual information will be treated as strictly confidential and only a summary of the answers received will be published. Responses to the survey will be kept anonymous. No firms or individual respondents will be named.

The findings of the research will be published in a full report later this year. You will receive a complimentary copy of the report for participating. It will reveal best practices and important relationships driving M&A success. If you have any questions regarding the survey or this research project, please contact myself (hanna.lee@durham.ac.uk or (44) 07775 457116) or my supervisors Dr. Paul Hughes (paul.hughes@durham.ac.uk) and Dr. Mat Hughes (mat.hughes@durham.ac.uk).

We take this opportunity to ask you to please consider the importance of this study and we thank you in advance for your valuable cooperation.

4.1.2. Survey Invitation

Dear <<Name>>

Explaining Cross-Border Merger & Acquisition Success

I am Hanna Lee studying cross-border Mergers and Acquisitions (M&As), which are understood as the buying of firms, assets, portfolios in geographically and psychically distant country, at Durham University Business School. As part of my PhD research, I am collecting data from senior managers of UK acquirers on their views about a post-acquisition process, knowledge transfer and sharing, and organisational performance following their most recent cross-border merger and acquisition. This research project is funded by Durham University Business School, and its findings will be published in a full report later this year, a copy of which will be freely available to you should you participate.

I invite you to take part in this survey, as one of the few UK acquirers that have made a cross-border merger or acquisition since 2012, which is the selection criterion for this research. Your response to the survey will play a critical part in developing our understanding of the key factors leading to successful M&As.

The survey should be completed by a senior-level manager in the firm. The survey consists of 20 questions and should take around 10 minutes to complete. There are no right or wrong answers to these questions. It is your own responses that are important.

Please be assured that individual information will be treated as strictly confidential, kept anonymous, and only used in aggregate form. No firms or individual respondents will be identified.

Please find below a link to the survey (**Your code** to access the survey is <<**Access Code**>>):

The findings of the research will be published in a full report later this year. You will receive a complimentary copy of the report into M&A performance. If you have any questions regarding the survey or this research project, please contact myself (hanna.lee@durham.ac.uk and (44) 07775 457116) or my supervisors Dr. Paul Hughes (paul.hughes@durham.ac.uk) and Dr. Mat Hughes (mat.hughes@durham.ac.uk).

By completing and submitting this survey, you are indicating your consent to participate in the study.

We highly appreciate your participation and will provide a copy of the survey results to all participants.

4.1.3. First Reminder

Dear <<Name>>

Explaining Cross-Border Merger & Acquisition Success

A short time ago a survey seeking information relating to cross-border M&As was sent to you.

This study is funded by Durham University Business School. As a UK firm recently involved in a cross-border M&A, your response forms a critical part of my PhD project.

Only a small sample of UK firms have carried out cross-border M&As since 2012, and so your response is extremely valuable to our research.

We strongly encourage you to participate.

The survey should only take 15 minutes to complete and all responses will be treated with **absolute confidentiality and anonymity**.

Please find below a link to the survey (**Your code** to access the survey is <<**Access Code**>>):

In return for your help, all final results and recommendations will be sent to you in a free report.

If you have any questions, please contact me by email hanna.lee@durham.ac.uk.

We look forward to your responses and thank you in advance for your valuable cooperation and time.

4.1.4. Second Reminder

Dear <<Name>>

A short time ago we wrote to you about a research project among UK acquiring firms explain cross-border M&A success, which is funded by Durham University Business School. The research project is aiming to understand: (1) how organisational conditions of an acquirer and institutions of the host country where its most recent cross-border M&A is located influence post-acquisition integration, and (2) how knowledge sharing between acquiring and acquired firms is associated with organisational and innovation performance.

Your firm has been selected in our small sample that has been designed to be representative of UK acquiring firms. You have been chosen as the <<Position Title>> in your acquiring firm from which we need information because your unique position qualifies you to provide the most reliable views. So far, we have received a successful response from many diverse acquiring firms competing in a variety of markets. Despite this, we would very much like you to participate in this project.

The questionnaire should take around 15 minutes to complete and all responses will remain **completely confidential**.

Please find below a link to the survey (**Your code** to access the survey is <<**Access Code**>>):

The findings of the research will be published in a full report later this year. You will receive a complimentary copy of the report as a thank you for participating. It will reveal best practices and important relationships driving M&A success. If you have any questions regarding the survey or this research project, please contact myself (hanna.lee@durham.ac.uk or (44) [07775457116](tel:07775457116)) or my supervisors Dr. Paul Hughes (paul.hughes@durham.ac.uk) and Dr. Mat Hughes (mat.hughes@durham.ac.uk).

We would be very pleased and grateful to receive your completed questionnaire as soon as possible. We highly appreciate your participation.

Appendix 4.2: Survey Questionnaire

Variables	Survey Questions
<p>Structural Integration</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent does your firm integrate the target firm in the following functional areas?</p> <p>Market decisions</p> <p>Operating decisions</p> <p>Human resource management</p> <p>R&D activities</p> <p>Strategy formulation</p>
<p>Autonomy</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent does your firm grant autonomy to the target firm in the following functional areas?</p> <p>Market decisions</p> <p>Operating decisions</p> <p>Human resource management</p> <p>R&D activities</p> <p>Strategy formulation</p>
<p>Knowledge Transfer from Acquired Firms</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent has your firm used resources from the target firm to assist your own?</p> <p>Use of the target firm's innovation capabilities</p> <p>Use of the target firm's know-how in processes</p> <p>Use of the target firm's sales networks</p> <p>Use of the target firm's managerial capabilities (reporting, planning, tools, financial expertise)</p> <p>Use of the target firm's financial resources</p>
<p>Knowledge Transfer to Acquired Firms</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, to what extent has your firm transferred resources to the target firm to assist it?</p> <p>Transfer of innovation capabilities to the target firm</p> <p>Transfer of know-how to the target firm</p> <p>Integration of products from the target firm into our firm's sales networks</p> <p>Transfer of managerial capabilities to the target firm</p> <p>Transfer of financial resources to the target firm</p>
<p>Knowledge Sharing</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) together, how strongly do you agree or disagree with each of the following statements?</p> <p>Employees see benefits from exchanging and combining ideas with one another.</p> <p>Employees believe that by exchanging and combining ideas they can move new projects or initiatives forward more quickly than by working alone.</p> <p>Employees are proficient at combining and exchanging ideas to solve problems or create opportunities.</p> <p>Employees do a good job of sharing their individual ideas.</p> <p>Employees are capable of sharing their expertise to bring new projects or initiatives to fruition.</p> <p>Employees are willing to exchange and combine ideas with their co-workers.</p> <p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how strongly do you agree or disagree with each of the following statements?</p>
<p>Exploitation Innovation</p>	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how strongly do you agree or disagree with each of the following statements?</p> <p>We frequently refine existing products and services.</p> <p>We regularly implement small adaptations to existing products and services.</p>

	<p>We introduce improvements to existing products and services for our market.</p> <p>We increase economies of scale in existing markets.</p> <p>Lowering costs of internal processes is an important objective.</p>
Exploration Innovation	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how strongly do you agree or disagree with each of the following statements?</p> <p>We invent new products and services.</p> <p>We experiment with new products and services in our market.</p> <p>We commercialise products and services that are completely new to the firm.</p> <p>We frequently pursue new opportunities in new markets.</p> <p>We regularly use new distribution channels.</p>
M&A Performance	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) now, how has your business performed in relation to the following areas?</p> <p>Market share</p> <p>Sales volume</p> <p>Sales growth</p> <p>Return on investment</p> <p>Return on sales</p> <p>Profitability</p> <p>Earnings per share</p> <p>Share price</p>
NPD Performance	<p>Thinking about your firm and the target firm of your most cross-border recent merger (or acquisition) now, to what extent has new product development performance improved following the cross-border merger (or acquisition)?</p> <p>Revenues from new products compared with business objectives</p> <p>Growth in revenues from new products compared with business objectives</p> <p>Profitability of new products compared with your business objectives</p> <p>Growth in profitability of new products compared with business objectives</p> <p>Growth in sales of new products compared with business objectives</p>
Outcome Control	<p>Thinking about how your firm exerts control onto the target firm of your most recent cross-border merger (or acquisition), how strongly do you agree or disagree with each of the following statements?</p> <p>Our firm places significant weight on timely project completion.</p> <p>Our firm places significant weight on project completion within budget.</p> <p>Our firm places significant weight on meeting our requirements.</p> <p>Our firm places significant weight on accomplishing project goals.</p>
Shared Goals	<p>Thinking about your firm and the target firm of your most recent cross-border merger (or acquisition) together, how strongly do you agree or disagree with each of the following statements?</p> <p>We share a joint vision of what is necessary for mutual success.</p> <p>We know with certainty what we expect of each other.</p> <p>We proactively work together to establish annual sales goals.</p> <p>We can state with certainty that we have the same basic beliefs about running a business.</p>
Micro-Environmental Factors	<p>Comparing the UK market with the host market in which your most recent cross-border merger (or acquisition) is based, to what extent do you see the UK market as similar to or different from the host market with regard to the following areas?</p>
Customer Characteristics	<p>Customers' price sensitivity</p> <p>Product/service evaluation criteria</p> <p>Customers' sensitivity to purchasing criteria</p> <p>Usage patterns of products/services</p>
Market	<p>Demand</p>

Munificence	Market growth Potential profitability Market size
Market Turbulence	Rate of competitor market entry Rate of competitors' strategic changes Competitive pressure by market incumbents Rate of unexpected competitor entry Rate of competitor exit Rate of competitors' new product introductions Rate of change in customer product preferences Rate of change in customer demand Pressure from new customers
Macro-Environmental Factors	Comparing the UK market with the host market in which your most recent cross-border merger (or acquisition) is based, to what extent do you see the UK market as similar to or different from the host market with regard to the following areas?
Economic Condition	Purchasing power of customers Level of industrial development Communications infrastructure Income distribution Inflation rates
Technological Turbulence	Rate of minor technological change Rate of new technological development Difficulty in forecasting technological change Pressure for technological change
Socio-Cultural Condition	Cultural, values, beliefs, and attitudes Aesthetics preferences Levels of education and knowledge Cultural customs and traditions Religious traditions concerning the environment and society
Regulatory Conditions	Laws and regulations concerning company protection Laws and regulations concerning customer protection Laws and regulations concerning mergers and acquisitions Laws and regulations concerning competition Taxation

Appendix 4.3: Multiple Regression Analysis

4.3.1. The Logic behind Multiple Regression Analysis

A necessary starting point of multiple regression analysis is simple linear regression analysis, the rationale behind which lies in the linear relationship between an independent variable and a dependent variable as depicted in the form " $y = \beta_0 + \beta_1 x$ " (Gravetter & Wallnau, 2009; Newbold et al., 2010). It identifies the value of the intercept (β_0) that represents the value of x when it gives the value of zero and the slope of the line (β_1) that represents the change in y in response to an increase (or a decrease) of one unit in x (Newbold et al., 2010). However, in the real world, there are other identifiable and unknown

factors that affect a dependent variable. The effects of these factors are conceptualised as an error term labelled as ε in the linear regression analysis (David & Sutton, 2011). Therefore, linear regression population analysis is specified as

$$y = \beta_0 + \beta_1 x + \varepsilon \quad (4.1)$$

Where:

y is observed value of the dependent variable

x_j is observed value of the independent variable

β_0 is population's regression constant

β_1 is population's regression coefficient for the independent variable

ε is error term

Within the regression analysis, it predicts the best linear relationship between x and y by finding regression coefficients b_0 and b_1 of respective population parameters, β_0 and β_1 , in the equation $\hat{y} = b_0 + b_1 x$ (Berenson et al., 2012). However, the estimated linear regression analysis in the absence of specific value of the regression coefficients b_0 and b_1 draws an infinite number of possible regression lines for a set of given data points (x_i, y_i) , such that each of the lines has its own unique values for b_0 and b_1 (Groebner et al., 2008). Among these different lines, linear regression analysis finds the regression coefficients b_0 and b_1 that produce the best-fitting line while minimising error sums of squares (SSE) between actual value of y (y_i) and its predicted value (\hat{y}_i), such that observations tend to go close to the line (Berenson et al., 2012; Groebner et al., 2008). Hence, the logic behind linear regression analysis is to find the line of best fit given by a set of data points while minimising e_i as seen in Equation 4.2 (David & Sutton, 2011; Newbold et al., 2010). The error sums of squares and the regression coefficients b_0 and b_1 are computed by Equation 4.3 to Equation 4.6, which are conceptualised as least squares regression.

$$y_i = b_0 + b_1 x_i + e_i \quad (4.2)$$

$$\hat{y}_i = b_0 + b_1 x_i \quad (4.3)$$

$$SSE = \sum_{i=1}^n e_i^2 = \sum_{i=1}^n (y_i - \hat{y}_i)^2 = \sum_{i=1}^n (y_i - (b_0 + b_1 x_i))^2 \quad (4.4)$$

$$b_1 = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sum(x - \bar{x})^2} = \frac{\sum xy - \frac{\sum x \sum y}{n}}{\sum x^2 - \frac{(\sum x)^2}{n}} = r_{xy} \frac{s_y}{s_x}$$

(4.5)

$$b_0 = \bar{y} - b_1 \bar{x}$$

(4.6)

Where

y_i is observed value of the dependent variable for observation i

\hat{y}_i is estimated, or predicted, value of the dependent variable for observation i

x_i is observed value of the independent variable for observation i

b_1 is estimate of the regression slope, found using Equation 4.6

b_0 is estimate of the regression intercept, found using Equation 4.7

r_{xy} is sample correlation

s_y and s_x are sample standard deviations for y and x , respectively

\bar{y} and \bar{x} are the mean value of y and x , respectively

It is unlikely to be true to be able to explain a phenomenon based on two variables due to many other factors influencing a dependent variable. Therefore, in most applications of regression analysis, researchers carry out multiple regression analysis as an extension of the linear regression analysis by adding independent variables and gain the greatest additional predictive power by minimising differences between the observed value, and the predicted value, of the dependent variable (Hair et al., 2006). Thus, the matrix expressions for multiple regression analysis are described as a combination of those products where each independent variable is multiplied by the slope for that variable are added to the intercept, as depicted below:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \varepsilon$$

(4.7)

Where:

y is observed value of the dependent variable

x_j is observed value of the j^{th} independent variable (where $j = 1, 2, 3, \dots, k$)

β_0 is population's regression constant

β_j is population's regression coefficient for the j^{th} independent variable (where $j = 1, 2, 3, \dots, k$)

ε is error term

Simple linear regression analysis represents the linear relationship between an independent variable and a dependent variable while minimising the distance between the observed value of y (y_i) and its predicted value (\hat{y}) as much as possible. That is, linear equation estimates change in the mean of y per unit change in x , while minimising error sums of squares (Berenson et al., 2012). In a similar vein, multiple regression analysis, which uses a set of independent variables to predict the value of a dependent variable, represents the linear relationship between each of the independent variables and the dependent variable, taking into account the effects of other unidentified factors that affect the predicted value of y (Berenson et al., 2012; Groebner et al., 2008). That is, multiple regression analysis calculates sample regression coefficients, b_j , of the independent variables, x_j , for population model parameters, β_j , while controlling for the simultaneous effects of other independent variables and minimising the effects of error term as much as possible (Berenson et al., 2012). As a theory and analysis developed for simple regression analysis are much similar to those of multiple regression analysis, it is viewed as an extension of simple linear regression analysis, representing the relationship between independent variables and a dependent variable by the form shown in Equation 4.8 (Berenson et al., 2012).

$$\hat{y} = b_0 + b_1 x_1 + b_2 x_2 + \dots + b_k x_k \quad (4.8)$$

Where

\hat{y} is estimated, or predicted, value of the dependent variable

x_j is observed value of the j^{th} independent variable (where $j = 1, 2, 3, \dots, k$)

b_0 is estimate of the regression intercept

b_j is estimate of the regression coefficient for the j^{th} independent variable (where $j = 1, 2, 3, \dots, k$)

As a value that gives the best prediction of y is determined by regression coefficients while they produce the smallest possible error sums of squares, least squares regression subject to two independent variables for convenience' sake here calculate the regression coefficients b_0 , b_1 , and b_2 by using the following equations.

$$y_i = b_0 + b_1 x_{i1} + b_2 x_{i2} + \dots + b_k x_{ik} + e_i \quad (4.9)$$

$$\hat{y}_i = b_0 + b_1 x_{i1} + b_2 x_{i2} + \dots + b_k x_{ik} \quad (4.10)$$

$$SSE = \sum_{i=1}^n e_i^2 = \sum_{i=1}^n (y_i - \hat{y}_i)^2 = \sum_{i=1}^n (y_i - (b_0 + b_1 x_{i1} + b_2 x_{i2}))^2 \quad (4.11)$$

$$b_1 = \frac{s_y (r_{x_1 y} - r_{x_1 x_2} r_{x_2 y})}{s_{x_1} (1 - r_{x_1 x_2}^2)} \quad (4.12)$$

$$b_2 = \frac{s_y (r_{x_2 y} - r_{x_1 x_2} r_{x_1 y})}{s_{x_2} (1 - r_{x_1 x_2}^2)} \quad (4.13)$$

$$b_0 = \bar{y} - b_1 \bar{x}_1 - b_2 \bar{x}_2 \quad (4.14)$$

Where

y_i is observed value of the dependent variable for observation i

\hat{y}_i is estimated, or predicted, value of the dependent variable for observation i

x_{ik} is value of the j^{th} independent variable for observation i (where $j = 1, 2, 3, \dots, k$)

$r_{x_1 y}$ is sample correlation between x_1 and y

$r_{x_2 y}$ is sample correlation between x_2 and y

$r_{x_1 x_2}$ is sample correlation between x_1 and x_2

s_{x_1} is sample standard deviation for x_1

s_{x_2} is sample standard deviation for x_2

While simple linear regression analysis estimates a straight line of an independent and a dependent variable on a two-dimensional graph, multiple linear regression analysis forms a plane that best fits the data points of several independent variables and a dependent variable in multi-dimensional space, where each regression coefficient represents a different slope (Groebner et al., 2008; Newbold et al., 2010). Thus, least squares regression with more than two independent variables finds a plane that minimises error sums of squares which are directly related to the magnitude of the correlations between the independent variables (Gravetter & Wallnau, 2009; Newbold et al., 2010).

4.3.2. Significance of Multiple Regression Models

Multiple regression analysis calculates regression coefficients from sample data and estimates true regression coefficients for a population from the sample data. Because the regression coefficients are subject to sampling error, their estimated slope coefficient is not

zero although their population slope is zero (Gravetter & Wallnau, 2009). In this regard, it is vital to evaluate if a regression slope coefficient is significant and a regression model is good. The process of testing the significance of a regression model is based on coefficient of determination (R^2) and ANOVA, both of which are used to make inferences about if an overall regression model is statistically significant by measuring the amount of variability in a dependent variable and assessing its quality.

R^2 , which is defined as the measure of the portion of variation in y that is explained from its predicted regression line (\hat{y}), indicates the fit of a regression model to sample data (Newbold et al., 2010). Rationale behind R^2 lies at the comparison of the prediction of the regression line (\hat{y}) with the mean line (\bar{y}) in terms of the observed value of a dependent variable y (y_i) (Newbold et al., 2010). The mean line (\bar{y}), which is a horizontal line drawn at the simple mean of a dependent variable, predicts the observed value of y_i without use of any independent variable (Newbold et al., 2010). Thus, the mean line is not the best fitting line but used to compare against it when measuring variability explained by an independent variable in a regression model. The distance between the mean value of y (\bar{y}) and the observed value of y_i ($y_i - \bar{y}$) includes differences between the predicted value of y_i (\hat{y}_i) and the mean line (\bar{y}) ($\hat{y}_i - \bar{y}$) and differences between the observed value of y_i and the predicted value of y_i ($y_i - \hat{y}_i$) (Newbold et al., 2010). That is, total sums of squares (SS_{total}) consist of the portion predicted by a regression line (regression sums of squares, $SS_{regression}$) and the portion unpredicted by the regression line (error sums of squares, SS_{error}) (Newbold et al., 2010). In algorithm terms, $SS_{total} = SS_{regression} + SS_{error}$. Hence, R^2 measures the portion of variability of y_i predicted from a regression line, dividing regression sums of squares by total sums of squares (Gravetter & Wallnau, 2009). Put differently, error sums of squares, which account for variation in a dependent variable that is not explained by its linear relationship to all independent variables in a regression model, are directly and negatively associated with regression sums of squares. Hence, the error sums of squares are understood as $1 - R^2$ (Gravetter & Wallnau, 2009). Thus, a measure of R^2 is calculated by

$$R^2 = \frac{SS_{regression}}{SS_{total}} = \frac{\sum(\hat{y}_i - \bar{y})^2}{\sum(y_i - \bar{y})^2} = 1 - \frac{SS_{residual}}{SS_{error}} = 1 - \left(\frac{\sum(y_i - \hat{y}_i)^2}{\sum(y_i - \bar{y})^2} \right) \quad (4.15)$$

Where

$\sum(\hat{y}_i - \bar{y})^2$ is regression sums of squares

$\sum(y_i - \bar{y})^2$ is total sums of squares.

$SS_{regression} = R^2 SS_y$ is predicted variability

$SS_{residual} = (1 - R^2) SS_y$ is unpredicted variability

It is very obvious that the larger R^2 , the better explanations of a dependent variable, the better a model. While the cut-offs for the value of R^2 are not clear, an accepted rule is to achieve a R^2 value greater than zero at a significance level (de Vaus, 2014).

In order to interpret ANOVA for the significance of a regression model, it may be crucial to develop basic understanding of the logic of ANOVA. Briefly speaking, it evaluates mean differences in two or more populations by testing sample data on a null hypothesis (H_0) that sample means from each population are equal against alternative hypothesis (H_A) that sample means are substantially different. Therefore, ANOVA shows whether if sample is sufficiently dissimilar enough to confirm that it does not belong to the same population (Black, 1999; Gravetter & Wallnau, 2009).

$$H_0: \mu_1 = \mu_2 = \dots = \mu_i \text{ (where } \mu_i \text{ is the mean for the } i^{\text{th}} \text{ population)}$$

H_A : At least one population mean is different from another

The logic behind the test of the null hypothesis resides in different types of differences exhibited by samples. Random, unsystematic differences that naturally occur due to sampling errors are expected to exist anywhere in the data. Thus, it causes a certain level of variance in the data both within and between samples (Gravetter & Wallnau, 2009; Hinton, 1995). In contrast to the emergence of the unsystematic differences as a sort of background noise in results, systematic differences, which are general and origin differences distinguishing a sample from the others, is manipulated as an independent variable (Gravetter & Wallnau, 2009). Therefore, if variance within samples is larger than variance between the samples, the null hypothesis that all sample means are equal is true, and the differences between the samples are caused by sampling errors. However, if any differences between samples are bigger than unsystematic differences alone, alternative hypothesis that at least one of the samples is different from the others is true and there is evidence that differences between the samples are subject to not only sampling errors but also general differences between the samples (Gravetter & Wallnau, 2009). This comparison between and within samples is made by computing a statistic called an F ratio, as shown in the following structure.

$$\begin{aligned}
 F &= \frac{\text{systematic differences} + \text{random, unsystematic differences}}{\text{random, unsystematic differences}} \\
 &= \frac{\text{variance (differences) between sample means}}{\text{variance (differences) within sample means}} = \frac{\frac{SS_{\text{between}}}{df_{\text{between}}}}{\frac{SS_{\text{within}}}{df_{\text{within}}}}
 \end{aligned}
 \tag{4.16}$$

Extending the structure of ANOVA into its statistical terms, F ratio decides to reject the null hypothesis, measuring sums of squares between samples (SS_{between}) with sums of squares within samples (SS_{within}) divided by their respective degrees of freedom (df) (Black, 1999; Gravetter & Wallnau, 2009). In other words, a value around 1.00 in the F ratio where its numerator and denominator are roughly the same size suggests that the null hypothesis is true (Black, 1999; Gravetter & Wallnau, 2009). Conversely, noticeably larger F-ratio, where the size of differences between samples in the nominator is larger than that of differences within the samples in the denominator, suggests that the null hypothesis is rejected (Gravetter & Wallnau, 2009).

An emerging question in terms of the comparison of two variances is what value is to be close to 1.00. The distribution of F ratio, where the df values for the numerator and denominator of the F ratio are depicted, piles up around 1.00 and taper off to the right (Gravetter & Wallnau, 2009; Newbold et al., 2010). It presents the critical value for $\alpha = .05$ and $\alpha = .01$, which indicates the most unlikely 5% and 1% of the distribution of the F ratio, respectively. For example, in the distribution of the F ratio with $df_{2,12}$, the former of which indicates df of the numerator of the F ratio ($K - 1$, where K is the number of groups) and the latter of which indicates df of the denominator of the F ratio ($n - K$, where n is the total number of observations), the critical value of the F ratio is 3.88 at the 5% significance level and 6.93 at the 1% significance level from an F distribution table. The F ratio that exceeds 3.88 and 6.93 suggests that two sets of df fall into the upper tail of the F distribution beyond the rejection area. Therefore, it is concluded that the null hypothesis is false at .05 or .01. Consequently, ANOVA provides evidence that mean differences among sample data are majorly attributed to genuine differences between populations through a ratio of variance between samples to the variance within samples (Black, 1999).

Based on the understanding of the basic logic of R^2 and ANOVA, multiple regression analysis computes their significance statistics. Within multiple regression analysis, R^2 measures the proportion of variability in y that is explained by a set of independent variables (Berenson

et al., 2012). For example, in the case of multiple regression analysis with two independent variables, R^2 is computed using the following equation.

$$\mathcal{R}^2 = \frac{SS_{regression}}{SS_{total}} = \frac{b_1 SP_{x_1 y} + b_2 SP_{x_2 y}}{SS_y} \quad (4.17)$$

Where

$b_1 SP_{x_1 y}$ is sums of products of deviations for x_1 and y

$b_2 SP_{x_2 y}$ is sums of products of deviations for x_2 and y

SS_y is sums of products of deviations for y

Within multiple regression analysis, ANOVA accounts for the amount of the variation predicted by a regression line and that of the variation unpredicted, measuring the F ratio of regression sums of squares to error sums of squares, each divided by their degrees of freedom, as shown in Equation 4.18 (Newbold et al., 2010). In line with the principles of the F distribution discussed above, F statistics that exceed the critical value of two sets of degrees of freedom in the numerator and denominator in the F ratio indicate that a regression model as a whole is significant. There is the linear relationship between a dependent variable and at least one of independent variables (Berenson et al., 2012; Newbold et al., 2010).

$$F = \frac{MS_{regression}}{MS_{residual}} = \frac{\frac{SS_{regression}}{df_{regression}}}{\frac{SS_{residual}}{df_{residual}}} = \frac{\frac{SS_{regression}}{k}}{\frac{SS_{error}}{n - k - 1}} \quad (4.18)$$

Where

R^2 is coefficient of determination

k is number of independent variables

n is number of data points

$SS_{regression}$ is sums of squares regression

$SS_{residual}$ is sums of squares error

4.3.3. A Hypothesis Test

Although the significance tests of R^2 , ANOVA, and the F ratio assess overall model fit, it does not mean that all the variables in a model are significant and linearly associated. In order to provide evidence of a dependent variable's linear relationship to each of independent variables, a null hypothesis that population regression slope coefficient (β_j) is equal to zero ($H_0: \beta_j = 0$) is tested against alternative hypothesis that population regression slope

coefficient is not zero ($H_A: \beta_j \neq 0$) (Berenson et al., 2012; Newbold et al., 2010). Because sample regression slope coefficients (b_j) are estimators of population parameters (β_j), it is subject to sampling error and unlikely to be zero even though the population regression slope coefficient is zero (Groebner et al., 2008). Thus, the null hypothesis and alternative one are tested by a ratio of estimated regression slope coefficient (b_j) divided by its standard error (s_{b_j}), determining the existence of the significant linear relationship between a dependent and an independent variable. When a regression slope is zero, there is no linear relationship between the j^{th} independent variable and a dependent variable. In contrast, when it is not zero, the j^{th} independent variable is useful in explaining variation in the dependent variable (Groebner et al., 2008; Newbold et al., 2010).

$$t_{b_j} = \frac{b_j - \beta_j}{s_{b_j}} = \frac{b_j - 0}{s_{b_j}} = \frac{b_j}{s_{b_j}} \quad df = n - k - 1 \quad (4.19)$$

b_j is the sample slope coefficient for the j^{th} independent variable
 β_j is population regression slope
 s_{b_j} is the estimated standard error of the slope coefficient b_j

Where a calculated t-value of b_j exceeds a critical value from the t-distribution with degrees of freedom and $\alpha/2$, the former and the latter of which are taken in the form of $t_{df, \alpha/2}$, the null hypothesis is rejected at the α level of significance. For example, in the case of the slope coefficient (b_1) of 0.382 with a standard deviation (s_{b_1}) of 0.02529, the calculated t-value of 15.08 is greater than the critical t-value for 31 degrees of freedom at a level of significance of 0.05 ($t_{31, 0.025} = 15.08 > 2.0395$). Therefore, the null hypothesis is rejected and the relationship between each of independent variables and a dependent variable is defined.

4.3.4. Summary of Multiple Regression Analysis

I learn that multiple regression analysis is used to determine the linear relationship between a dependent variable and a set of independent variables, estimating change in the dependent variable according to change in one unit in the independent variable. Moreover, regression coefficients are of great importance, providing evidence that a regression model has the adequate power of predicting the value of a dependent variable given any particular value of an independent variable. It measures how much of variance is explained by all of independent variables put together and how much each of the independent variables contributes to the explanation of a dependent variable (Hair et al., 2006; Oppenheim, 1992).

Appendix 5.1: CFA Factor Loadings

Variables		Completely Standardized loadings (Lambda X)	Error variance (Theta-Delta)
Structural Integration	Market decisions	.80	.36
	Operating Decisions	.88	.22
	Human Resource Management	.76	.43
	R&D Activities	.85	.28
	Strategy Formulation	.63	.60
Autonomy	Market decisions	.88	.22
	Operating Decisions	.88	.22
	Human Resource Management	.66	.57
	R&D Activities	.79	.38
	Strategy Formulation	.68	.55
Knowledge Transfer from Acquired Firms	Use of the target firm's innovation capabilities	.77	.40
	Use of the target firm's know-how in processes	.89	.20
	Use of the target firm's sales networks	.57	.68
	Use of the target firm's managerial capabilities (reporting, planning, tools, financial expertise)	.67	.55
Knowledge Transfer to Acquired Firms	Transfer of innovation capabilities to the target firm	.91	.17
	Transfer of know-how to the target firm	.85	.28
	Integration of products from the target firm into our firm's sales networks	.47	.78
	Transfer of managerial capabilities to the target firm	.49	.76
Knowledge Sharing	Employees see benefits from exchanging and combining ideas with one another.	.83	.31
	Employees believe that by exchanging and combining ideas they can move new projects or initiatives forward more quickly than by working alone.	.85	.28
	Employees are proficient at combining and exchanging ideas to solve problems or create opportunities.	.86	.26
	Employees do a good job of sharing their individual ideas.	.86	.26
	Employees are capable of sharing their expertise to bring new projects or initiatives to fruition.	.86	.26
	Employees are willing to exchange and combine ideas with their co-workers.	.81	.34
Exploitation Innovation	We frequently refine existing products and services.	.79	.37
	We regularly implement small adaptations to existing products and services.	.95	.11
	We introduce improvements to existing products and services for our market.	.93	.14
	We increase economies of scale in existing markets.	.57	.68
Exploration Innovation	We invent new products and services.	.77	.40
	We experiment with new products and services in our market.	.92	.16
	We commercialise products and services that are completely new to the firm.	.76	.42
M&A Performance	Market share	.75	.43
	Sales volume	.82	.33
	Sales growth	.80	.37
	Return on investment	.90	.19
	Return on sales	.92	.16

	Profitability	.92	.15
	Earnings per share	.88	.23
	Share price	.77	.41
NPD	Revenues from new products compared with business objectives	.86	.25
	Growth in revenues from new products compared with business objectives	.92	.15
	Profitability of new products compared with your business objectives	.88	.22
	Growth in profitability of new products compared with business objectives	.93	.15
	Growth in sales of new products compared with business objectives	.90	.19
Outcome Control	Our firm places significant weight on timely project completion.	.87	.25
	Our firm places significant weight on project completion within budget.	.92	.16
	Our firm places significant weight on meeting our requirements.	.87	.25
	Our firm places significant weight on accomplishing project goals.	.81	.35
Shared Goals	We share a joint vision of what is necessary for mutual success.	.84	.30
	We know with certainty what we expect of each other.	.84	.29
	We proactively work together to establish annual sales goals.	.84	.30
	We can state with certainty that we have the same basic beliefs about running a business.	.76	.43
Customer Characteristics	Customers' price sensitivity		
	Product/service evaluation criteria	.82	.33
	Customers' sensitivity to purchasing criteria		
	Usage patterns of products/services		
Market Munificence	Market growth		
	Potential profitability	.75	.44
	Market size		
Market Turbulence	Rate of competitors' strategic changes		
	Rate of unexpected competitor entry		
	Rate of competitor exit		
	Rate of competitors' new product introductions	.75	.44
	Rate of change in customer product preferences		
	Rate of change in customer demand		
	Pressure from new customers		
Economic Condition	Level of industrial development		
	Communications infrastructure	.86	.26
	Inflation rates		
Technological Turbulence	Rate of minor technological change		
	Rate of new technological development	.64	.60
	Pressure for technological change		
Socio-Cultural Condition	Cultural, values, beliefs, and attitudes		
	Aesthetics preferences		
	Cultural customs and traditions	.83	.31
	Religious traditions concerning the environment and society		
Regulatory Conditions	Laws and regulations concerning company protection	.69	.52

	Laws and regulations concerning customer protection Laws and regulations concerning mergers and acquisitions Laws and regulations concerning competition Taxation		
Firm Size	Number of Employees	.84	.30
Firm Age	Firm Age	.69	.53

Appendix 5.2: Common Method Variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings	
	Total		Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance
1.	14.73	24.15	24.15	14.73	24.15	24.15	6.63	10.87
2.	6.18	10.13	34.29	6.18	10.13	34.29	6.39	10.47
3.	4.34	7.11	41.40	4.34	7.11	41.40	4.45	7.29
4.	4.19	6.87	48.27	4.19	6.87	48.27	4.30	7.04
5.	3.45	5.66	53.93	3.45	5.66	53.93	3.80	6.23
6.	2.69	4.41	58.34	2.69	4.41	58.34	3.76	6.16
7.	2.33	3.83	62.16	2.33	3.83	62.16	3.72	6.10
8.	2.02	3.32	65.48	2.02	3.32	65.48	3.30	5.40
9.	1.63	2.67	68.15	1.63	2.67	68.15	3.19	5.22
10.	1.39	2.28	70.43	1.39	2.28	70.43	2.93	4.80
11.	1.29	2.12	72.55	1.29	2.12	72.55	1.40	2.29
12.	1.08	1.78	74.32	1.08	1.78	74.32	1.39	2.28
13.	1.06	1.74	76.07	1.06	1.74	76.07	1.17	1.92
14.	.99	1.63	77.69					
15.	.94	1.55	79.24					
16.	.88	1.44	80.69					
17.	.80	1.32	82.00					
18.	.80	1.31	83.32					
19.	.68	1.12	84.44					
20.	.65	1.06	85.50					
21.	.57	.93	86.42					
22.	.55	.91	87.33					
23.	.53	.87	88.20					
24.	.47	.78	88.97					
25.	.44	.73	89.70					
26.	.42	.69	90.39					
27.	.40	.66	91.05					
28.	.38	.63	91.68					
29.	.35	.58	92.26					
30.	.34	.55	92.82					
31.	.32	.53	93.34					
32.	.30	.50	93.84					
33.	.29	.48	94.32					
34.	.26	.43	94.75					
35.	.26	.42	95.17					
36.	.24	.40	95.57					
37.	.23	.37	95.94					
38.	.21	.35	96.29					
39.	.21	.34	96.63					
40.	.19	.31	96.94					
41.	.18	.29	97.23					
42.	.16	.26	97.49					
43.	.15	.25	97.75					

44.	.14	.24	97.98	
45.	.14	.23	98.21	
46.	.11	.19	98.4	
47.	.11	.19	98.59	
48.	.11	.17	98.76	
49.	.10	.16	98.92	
50.	.09	.15	99.07	
51.	.08	.13	99.20	
52.	.07	.12	99.32	
53.	.06	.10	99.42	
54.	.06	.10	99.52	
55.	.06	.09	99.61	
56.	.05	.09	99.70	
57.	.05	.08	99.78	
58.	.04	.07	99.85	
59.	.03	.06	99.91	
60.	.03	.05	99.96	
61.	.03	.04	100.00	

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