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An Integrative Study on Impulse buying

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Thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

Durham Business School

Durham University

2019

Abstract

Researches of impulse buying have received wide and considerable interests during the past decades. However, these studies tend to differ heavily from each other in term of their research backgrounds, applied theories, methodologies, sample characteristics and practice focus. Researches of impulse buying are often replete with fragmented theoretical arguments and contradictory findings. Especially, there are conceptual disarrays among different impulse buying concepts and mixed empirical findings among trait predictors of impulse buying tendency and behaviour. Therefore, with such notice, this thesis tries to provide an integrative effort, through three pieces of studies, to synergise fragmentary findings in this field. Thus, it updates and complements contemporary knowledge of impulse buying. Specifically, the first piece of work, chapter two, provides a systematic review of previous conceptual frameworks of impulse buying. Kinds of literature are appraised with standard review criteria. The consistency and inter-links of their findings are assessed and a new conceptual framework is designed to synergise these findings. As a result, the new framework, on the one hand, provides a comprehensive account of impulse buying forms in line with Stern's (1962) impulse mix; on the other hand, it indicates the unique psychological and behavioural processes that consumers may experience under each form. Thus, to that end, chapter two provides a comprehensive view on impulse buying concepts, not only on its conceptual components but also shows how these components can engage, both internally and externally, to impulse buying at a given buying stage.

The second piece of work, chapter three, offers a meta-analysis of trait predictors of impulse buying tendency and behaviour. A total of 119 effects from 39 primary studies are coded in line with Mowen's 3M model (Mowen, 2000). The results suggest six of seven trait predictors of impulse buying tendency at the elemental level, two at the compound level and situational level. At the surface level, both cognitive and affective impulse buying tendencies are found positively and significantly predict actual impulse buying. Especially, the meta-analysis provides the average effect size of these predictors and justifies their reliability among different cultural, gender, and sample and measurements. Thus, it provides empirical evidence to justify and understand previously mixed findings in this field of research. Moreover, the third piece of work, chapter four further considers the evolutionary basis of impulse buying. 11 covariance matrix captured from a sample of 6,224 participants are used in a meta-analytical Structure Equation Modelling. The results suggest there is a significant and positive association between an individual's desire for social effectiveness and his/her impulse buying tendency, mediated by inclinations of shopping rewards. Hence, impulse buying might play a pivotal role for individuals to acquire socially desired resources and achieve socially favoured status. Thus, the study provides the evolutionary rationale that why impulse buying, when widely labelled as disorder behaviours, has been such a popular phenomenon and inherited across regions, ages, genders and generations (Bratko et al., 2013).

At last, limitations, direction for future studies and managerial implications are given in the final chapter, chapter five.

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Chapter 1 Introduction

Impulse buying (IB) describes a purchase when the consumer feels irresistible urge to buy and is unreflective about the buying outcomes. Marketers have a long interest in consumer's impulse buying. Since the first study in the early 1940s, more than 10,000 works spanning over 50 academic journals have been published on this issue. However, these studies usually differ from their research background, research theories, methodologies and practice focus. Therefore, IB studies are often replete with fragmented theoretical arguments and contradictory findings. Moreover, users of these findings, such as managers, also suggest findings provided limited usefulness in managerial decisions. From this view, the fragmentariness in IB research strongly curtails both academic researches and its practice meanings if they are not well synergised (Kalla and Arora, 2011; Muruganantham and Bhakat, 2013). While there are emerging efforts intend to consolidate existing IB knowledge, they have only attained limited success as they: 1) failed to provide the empirical basis (e.g. narrative reviews); 2) the empirical works highlight external factors as opposed to internal factors (Stanley, 2001; Amos et al., 2014). Thus, it is rather surprising to observe that although scholars have widely emphasized the influence of internal mechanisms, such as trait predictors, there remain mixed findings.

First of all, there are conceptual disarrays among impulse buying concepts. Previous IB arts provide a couple of ways and theoretical tools to define impulse buying (Stern, 1962; Kollat and Willett, 1967; Rook, 1987). Yet, these definitions are developed to fit specific research needs and try to provide insight into IB in unique perspectives or angles. None of them has been found as sufficient on its own from a multi-discipline view. Thus, it remains confusing for the researcher that as what IB concepts should be used or what IB forms should be concerned. There lacks an integrative account of these impulse buying conceptual frameworks thus provides a comprehensive view of IB concept.

At the second place, there are inconsistent understanding about trait predictors of impulse buying. As stated by Rook (1987), it is people, and not products, who experience consuming impulse. The taxonomical approach of shopping stimuli can be useful, but it tends to divert attention from the internal motivation and its expression that is crucial to

the impulsive purchase. Hence, trait models such as trait affection, trait impulsiveness and trait self-control have been widely investigated in IB arts (Rook and Fisher, 1995; Beatty and Ferrell, 1998; Baumeister et al., 2008; Thompson and Prendergast, 2015). Yet, trait models are usually equipped with “umbrella items” such that the same trait may have different components or labels under different models, or one component may be allocated to different buying traits. As studies may differ from their theoretical backgrounds and tools, their results tend to differ from each other although they indeed investigated similar trait predictors. There lacks a comprehensive and consistent view of these IB constructs. It remains unknown about the average effect sizes of these predictors and their reliability among samples with cultural and gender difference and methodological heterogeneities.

Against above backdrops, this thesis tries to provide an integrative effort to synergise fragmentary findings in the field of IB research. Thus, it contributes contemporary IB knowledge by offering a comprehensive account on both IB concepts and trait predictors of impulse buying tendency or actual impulse buying. Two aims of the thesis are: 1) To provide a comprehensive account of impulse buying concepts; 2) To provide averaged effect size of trait predictors of impulse buying tendency and impulse buying behaviour. To meet the two aims, this thesis is arranged as the following. At first, chapter 2 conducts a systematic review of conceptual frameworks of impulse buying. The theoretical background, methodology, practice focus, as well as its limitations and connections between these frameworks, will be identified and justified through the literature review. Although previous studies have suggested that these IB concepts can accommodate different forms and maintain their fundamental distinctness, this literature review finds their property fragments tend to be interdependent; in turn, such dependence, or consistency among studies, may offer a fertile ground on the basis of which conceptual disarrays can be synergised. Thus, the chapter further introduces the field theory by Lewin (1939) and co-ordinates conceptual disarrays based on the interdependence among previous IB concepts. It also borrows tools from topological psychology and uses previous IB concepts as ingredients to produce an IB concept in terms of a topological

constellation. The constellation, unlike previous concepts, takes into consideration IB properties from a wide range of research disciplines and considers the differences in IB stages. Thus, it provides a relatively comprehensive account of IB concept for multi-disciplinary use and eliminates the barriers resulted by conceptual disagreements in IB. Chapter three is thereafter conducted in terms of a meta-analysis. Especially, it provides a review of trait determinants of impulse buying tendency and impulse buying behaviours in line with the 3M model. Thus, the effect size is coded and evaluated at four hierarchies. The first hierarchy is elemental level comprising the Big Five Personality model and two evolutionary constructs, the need for material and need for arousal. The second hierarchy is the compound level, including the impulsiveness and sensation seeking. The third hierarchy is situational level, including shopping enjoyments and situation loss in self-control. The last hierarchy is surface level, comprise two measurements of impulse buying tendency, namely the affective impulse buying tendency and cognitive impulse buying tendency. A three-level meta-analysis approach is used to compute the averaged effect size and the reliability of these effects among different cultural, gender, age of samples and methodology issues.

Besides, chapter four further considers the evolutionary basis of impulse buying. Through a meta-analytical Structure Equation Modelling (Cheung, 2014), this thesis suggests that IB indeed has a strong root in a General Factor Model (GFM) of social effectiveness (Van der Linden et al., 2016). It might play a pivotal role for individuals to acquire socially desired resources and achieve socially favoured status. Thus, it would help understand and elucidate as to why IB has been such a popular phenomenon and inherited across regions, ages, genders and generations (Bratko et al., 2013).

Finally, chapter five provides an overall conclusion about this thesis. Key findings and limitations will be summarised in this chapter. Potential directions for future research are provided. Thereafter, the thesis offers possible managerial suggestions.

For these efforts, this thesis provides kinds of contributions to contemporary IB knowledges. At first, it offers a comprehensive account of IB concepts in line with Stern's (1962) impulse mix. The thesis is the first integrative work so far that has been made

specifically on IB conceptual fragmentariness. It makes linkages about previous impulse buying concepts and allocates observed conceptual features into each of four forms that provided by Stern (1962). Hence, on the one hand, this study complements the work of Stern (1962); on the other hand, it provides a detailed account of IB concept thus help scholars avoid confusions among various IB concepts. Secondly, this thesis is also the first work that applies the field theory into conceptual frameworks and the study of impulse buying. While the field theory has been widely used in predicting and manipulating an individual's or group's behaviours, this works suggests it also yields a potential in synergising conceptual fragments. It presents one IB concept in terms of a constellation model and shows the unique life-space of different impulse buying forms across buying stages. Especially, the IB constellation offers eight unique paths, four internals and four externals, of impulse buying behaviours. By such effort, it justifies the difference and similarity between IB forms which are relatively absent from previous IB researches. Thirdly, while previous IB researches mainly focus on one or three effects, this thesis offers 12 averaged effect size of trait predictors on IB tendency or behaviours through a meta-analysis of 61,654 participants. Especially, 10 of 11 tested predictors are found significantly associated with an individual's impulse buying tendency and both the affective and cognitive impulse buying tendency are found positively and cognitive connected to one's actual impulse buying behaviour. Thus, this study synergised mixed findings from previous studies. At last, this thesis also explores the evolutionary basis of impulse buying by introducing the model of general factor personality (GFP). There is a significant and positive relation has been observed from the GFP to impulse buying. The result suggests impulse buying represents one of the ways that individuals acquire socially desired products and resources. Thus, while impulse buying has been widely noticed as dysfunctional behaviours, this study at first provides empirical evidence to show that it may serve the interest of one's social effectiveness and impart certain adaptive advantages for the individual.

Chapter 2 A systematic review of Impulse Buying Concepts

2.1 Introduction

Multi-aspect items such as Impulse Buying (IB) usually co-ordinate with various observable facts or procedures from a broad array of research domains, thereby making it a challenging task to comprehensively define it. The majority of contemporary works in IB has merely been conducted in a single research domain rather than across disciplines, in which case the degree of consistency or compatibility of fragmentary concepts might be justified and integrated (Xiao and Nicholson, 2013). Accordingly, despite the fact that several ways of defining IB can be noticed in previous studies, none of them has been found to be sufficient on its own from a multi-discipline view.

As a matter of fact, early studies have experienced a long-held debate in defining IB properties and often are ridden with disagreements. The term impulse buying was initially introduced by the Du Pont survey in 1948 where it was interchangeably used as unplanned purchase in order to describe an item that was not on the shopping list before entering the supermarket. Subsequent works from Stern (1962) and Kollat and Willett (1967) further develop this viewpoint, criticising the lack in a theoretical context. However, they have also missed out on the essential role of consumers. Hence, it has elicited critiques from psychological researchers as they observed that proxies of product features, such as product design, locations or product packages, maybe inconsistent across contexts. Instead, internal factors, such as the emotions (Weinberg and Gottwald, 1982), impulsiveness (Rook and Hoch, 1985) or self-depletion (Baumeister, 2002) become much clearer in terms of governing consumer behaviours. These findings suggested that individual-level difference could be visceral to IB. However, accepting such viewpoints lead the subsequent IB research into various dimensions due to the “umbrella nature” of personality. For instance, consumer impulsivity is accompanied with various constructs that tend to differ in theoretical tools, such as impulsiveness, novelty-seeking, non-planning (Eysenck and Eysenck, 1986), Behavioural Active System (BAS) and Behavioural Inhibition System (BIS). In turn, each of these constructs leads IB research towards unique dimensions and elicits fragmented results.

These definitions suggest IB can be in different forms. In fact, viewing IB as a single form

can often lead to paradoxical or contradictory findings. For instance, IB is often associated with joy and pleasure but has also been found related to negative emotions and low self-esteem (Verplanken and Sato, 2011). However, such inconsistency can be in part explained as consumers indeed make a different form of IB. For example, in line with Stern (1962), suggestion impulse purchase will help consumers improve self-esteem thus will not suffer negative feelings that pure impulse buyers will come through. In this view, it is important for research to be aware of the exact form of IB they deal with thus avoid potential inconsistency among studies. Hence, different forms of IB should be distinguished from each other in terms of their similar and unique conceptual properties. However, while the diversified understanding about IB definition has long been noticed, few works so far have been made to stress it. The majority of IB studies and integrative works in this field mainly considered the predictors of Impulse buying behaviour more than the behaviour itself.

Thus, there is, so far, no clear consensus exists on what exactly constitutes each form of impulse buying. In this case, this thesis at first conduct a systematic review to cover such a gap. Two aims of the current review are: 1) identifying conceptual frameworks of impulse buying; 2) integrating the conceptual forms to a comprehensive view of impulse buying.

2.2 Methods

2.2.1 Search Strategy

A systematic review is conducted to identify frameworks describing the constructs of impulse buying. The research is conducted in six databases: Direct Science, J-store, Wiley Library, EBSCO, Emerald Insight as well as the Library of Durham University. The search is restricted to literature that is written in English. The time range is 1948 to 2018. All peer-reviewed journal articles are reviewed. Subjects areas include business, management, marketing, economics, sociology, psychology and clinical and medical. Search Strategies are adapted from previous review studies about IB predictors and

narrowed down to limit and emphasis a focus on conceptual frameworks on IB. Table 2.2.1 presents search strategies.

Table 2.2.1 Search Strategies for Literature Research

Database	Search Strategy	Adapted from:
Direct Science, J-store, Wiley Library, EBSCO, Emerald Insight; and the Library of Durham University	Impulse, impulse buying Impulse buying, impulsiveness, online impulse, consumer behaviour, hedonic motivation, retailing	Kalla and Arora, 2011 Muruganantham and Bhakat, 2013
	'impulse (impulsive) buying (purchasing)', 'impulsivity and consumer debts (excessive and overspending)', 'compulsive buying' and 'unplanned buying'	Xiao and Nicholson, 2013
	Impulse buying tendency, Psychographics, Dispositional motivational forces, Social influence, affect, constraints, Retailing environment, Shopping behaviour, Situational motivation, Product characteristics Gender, Age, Income	Amos and colleagues, 2014

2.2.2 Study Selection

Above selective criteria are used to distil desired samples from a whole sample of IB studies. In general, there are two rounds of review processes. At the primary review, the titles and abstracts are reviewed. To cover a wide range of account of IB concepts, this studies also considers similar constructs to IB, such as indulgence purchase, compulsive

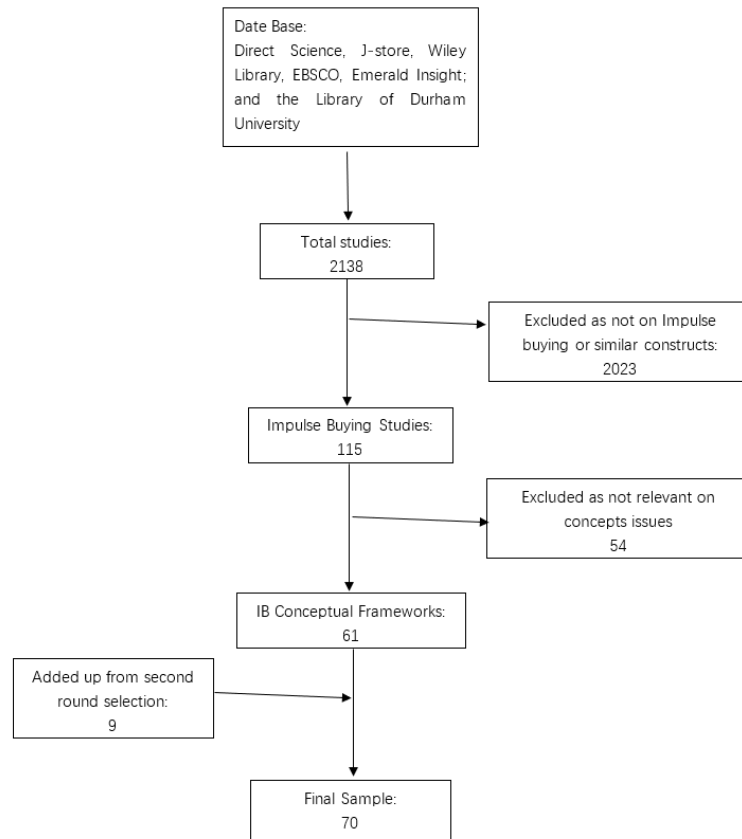
purchase and so on. In addition, as this session particularly focus on IB concepts, in sake of brevity, the review work will mainly include conceptual frameworks of impulse buying thus exclude research that focus on predicting or manipulating impulse buying unless it complements to a framework. Thus, two exclusion criteria are used to identify and confirm the data for this systematic review. The two exclusion criteria are: 1) not on impulse buying or similar constructs such as indulgence purchase and compulsive purchase; 2) not on conceptual issues of Impulse buying. The second rounds review replicates the first-round review after 3 months of the first review to 1) reconsider the outcomes of the first-round review, and 2) make sure there are no missed relevant studies. Finally, the sample is distilled based on the outcomes of both rounds.

2.3 Results

2.3.1 Study Selection

The overall search provides an initial sample of 2,138 studies. From this total of 2,138 studies, 2,023 studies are excluded as not relevant to impulse buying or similar constructs. 54 are excluded as not on conceptual frameworks. However, the second-round review notice 9 studies as relevant to this study thus add it to the sample. As results, a final sample comprises of 70 studies are included in this review. Figure 2.3.1 provides a flowchart of the study selection process. For each identified study, its theoretical background, conceptual methodology, key arguments as well as published years are extracted. In shorts, 2077 are excluded from the reviews as not meeting the selective criteria. 9 studies are added from the second reviewing process.

Figure 2.3.1 Flowchart of Study Selection Process



2.3.2 General Description of the Studies

Seventy studies are identified that presented a conceptual framework of impulse buying constructs. In 7 of 70 studies provides original conceptual frameworks and the remaining was complementary works that develop impulse buying concepts. The study on impulse buying starts from the late 1940s but it becomes popular after the late 1980s. Most of the conceptual works in this field are completed after 2000.

In general, two temporal phases which have different focuses can be observed from these studies. The first one commences from 1948. It considers IB as unplanned behaviour that is made distinguishable to its planned counterpart. IB is generally viewed as an outcome of external stimulus. Such concepts are later criticised for palpable loss of theoretical rigour given that they are too far down the relevance-usability route and therefore, fail to capture the inter-personnel motivation. Thus, in order to fill the gap, the second wave of IB conceptualising starts from 1982 and attempts to link it with certain personalities. However, the multi-aspect nature of relevant IB personality, such as consumer impulsivity or consumer emotion, has resulted in diversified conceptual

dimensions that tend to vary among theoretical contexts. Table 2.3.2 presents an overview of identified conceptual frameworks and essential works that further develop these concepts.

Table 2.3.2 Overview of Identified Conceptual Frameworks of Impulse Buying

Generic

Frameworks

Phase I: Unplanned Purchase

	Conceptual Framework	Complementary study	
<i>DuPont Survey (1948-1965)</i>	Impulse buying is interchangeably used as unplanned purchase	Clover (1951)	Provide product categories are more sole on impulse
<i>Stern (1962)</i>	The Impulse Mix: Pure Impulse Purchase; Reminder Impulse Purchase; Suggestion Impulse Purchase; Planned Impulse Purchase	Han and colleagues (1991) Liao and Colleagues (2009) Deaux (1986) Nebitt (1959)	Impulse Buying Urge; Fashion Orientation Rational motivation; Utilitarian goals; Regret response Shopping enjoyments and merchandises Intelligent shopping
<i>Kollat and Willett (1967)</i>	Typology Matrix	Iyer (1989) Youn and Faber (2000)	Unplanned nature; Time constraints; Relevant stay layout Lack of Perseverance

Phase II Individual Difference

	Conceptual Framework	Complementary study	
<i>Weinberg and Wolfgang (1982)</i>	<p>Impulse buying is defined as:</p> <p>Affective: High activation of the consumer;</p> <p>Cognitive: Little intellectual control of the buying decision;</p> <p>Reactive: Largely automatic behaviour actuated by a special stimulus situation</p>	<p>Herabadi and colleagues (2009)</p> <p>Verplanken and Herabadi (2001)</p>	<p>Arousal;</p> <p>Positive emotion and hedonic consideration.</p> <p>Feelings of pleasure, excitement, lack of control, regret</p>
<i>Strack and Colleagues (2006)</i>	<p>Reflective and Impulsive Model of Impulse Buying</p>	<p>Evan and Stanovich (2013)</p>	<p>The dual processing systems</p>
<i>Rook (1987)</i>	<p>Impulsivity:</p> <ol style="list-style-type: none"> 1) A sudden and Spontaneous desire to act; 2) A state of psychological disequilibrium; 3) The onset of psychological conflict and struggle; 4) A reduction in cognitive evaluation and 	<p>Beatty and Ferrel (1988)</p>	<p>Details are provided later in Table 2.3.8</p> <p>Review of impulsivity concepts and its use in research of impulse buying</p>

5) Lack of regard for the consequences

<i>Baumeister and colleagues (1994)</i>	Strength Model of Self-control	Sharma and colleagues (2010)	Loading of situational stimulus
		Vohs and Faber (2007)	Ego-depletion

Phase I: *Unplanned Purchase*

2.3.3 Du Pont Survey

The initial records of IB concept can be traced back to almost 70 years ago when the DuPont *Consumer buying Habits Studies* (1948-1965) announced that nearly 50% of the products in food supermarkets were purchased in an unplanned manner. IB was used in a similar manner to that of unplanned purchases to describe the purchase of an item that is not in a shopping list but is identified by an interview before consumers enter the shops. Subsequent studies, such as the ones conducted by Clover (1950) and West (1951), have further acknowledged this view by including a more specified marketing set or product feature that is associated to IB, such as candy, stationery, drugs and sundries. These study firstly distinguished IB from the other purchases through an emphasis on the unplanned nature of IB. However, as pointed out later by a couple of studies, unplanned buying might be a quick and accurate concept but its scope could be quite limited. Bellenger and colleagues (1978) view such a definition as managerial considerations that involve the inconvenience of managers. By emphasising product features, these definitions underplay the theoretical basis, thus, as later criticised by Kollat and Willett (1967), point towards the lack of reliable and valid measures on IB. In the example of Du Pont Survey, consumers were asked, through the interviews, as to what they would buy before entering the supermarket and were checked again after coming out of it. The

difference between the items on their shopping list and what they actually purchased was marked as unplanned purchase/IB. Due to the fact that consumers may be unable to articulate their shopping plans for several reasons, e.g. absence of shopping list, exposure to in-store stimuli or even because they may not spend a lot of time on the interview, findings from the interviewees may not be able to sufficiently disclose the actual shopping plan. In other words, such measures neglect the difference between measured purchase intention and actual purchase intention. Therefore, it led to, albeit to some extent, the deviation of measured purchase plans from the actual purchase plans, in which case more reliable measures on IB were needed. Similar issues can also be observed from Clover's (1950) study, in which case questions depend upon the manager's own opinions, as opposed to being an objective and theory-guided one. In addition, measuring product proxies also turns to be invalid due to the underlying weakness in replicability. The measure only concerns its typicality within one certain context but misses the point of out of sample compatibility. One measure is very likely to lose its usefulness when used in new samples as its basis; meanwhile, the products' features may vary heavily depending on the context.

Hence, as it can be expected, the absence of both reliability and validation in measurements leads to limited usefulness in outcomes, as shown by the example in Clover (1951).

Table 2.3.3 Impulse buying and product categories. Adapted from Clover (1951)

Type of Store	No. of Stores	No. of Em- ployees	Mgrs.' Est. of Per cent Impulse- Sales are of Total Sales (Averages)*	Would 40 hr. week decrease sales?			Per cent of Deviation in Sales* from 1st Week, i.e., the Base Week†					See Key in Foot- note‡
				Yes	No	Don't Know	1st Week	2nd Week Closed 1 day	3rd Week	4th Week Closed 1 day	5th Week	
LUBBOCK												
Variety	7	171	60.48	0	4	3	0.0	-16.54	+ 0.64	-15.91	- 7.91	I M
Grocery	26	350	26.02	20	2	4	0.0	-15.45	- 0.05	-10.36	- 6.85	I W
Service Station	13	77	14.80	8	5	0	0.0	-13.81	- 4.38	-12.70	- 7.31	I W
Book	6	22	14.66	2	1	3	0.0	-31.84	+ 2.32	-20.23	+ 4.18	I S
Department	5	203	14.54	2	3	0	0.0	-25.24	+19.99	-12.51	+21.49	PS
Men's Clothes	4	33	13.68	2	2	0	0.0	+ 0.81	+45.84	-35.43	-39.19	?
Gift	4	7	13.21	1	3	0	0.0	-12.86	+ 7.86	+98.21	+30.93	?
Ladies Wear	15	103	12.33	12	3	0	0.0	-45.71	-27.86	-27.72	- 6.44	I W
Barber Shop	5	18	12.26	2	3	0	0.0	- 9.62	- 7.72	-14.20	- 0.35	I W
Jewelry	5	62	11.81	4	1	0	0.0	+ 5.09	-11.29	-16.21	-25.62	?
Beauty Shop	5	18	11.31	2	3	0	0.0	-15.30	+ 3.08	- 8.80	+10.22	P W
Theater (Movie)	10	91	10.12	10	0	0	0.0	-20.27	- 8.36	-17.24	-26.10	?
Florist	1	4	10.00	1	0	0	0.0	-34.00	0.00	+77.00	+26.00	?
Hardware	5	62	10.00	3	2	0	0.0	-19.89	- 4.79	+ 0.57	+ 4.68	?
Sport Goods	1	4	10.00	1	0	0	0.0	-67.00	-36.00	-26.00	+55.00	?
Furniture	5	31	3.81	4	1	0	0.0	-28.86	-20.51	-29.14	-32.99	?
Auto Supply	4	97	3.51	3	1	0	0.0	- 6.28	- 2.31	-16.59	+ 0.37	I W
Lumber	1	8	2.00	0	0	1	0.0	-20.00	+16.00	-30.00	0.00	I M
Paint & Paper	1	11	No. Ans.	1	0	0	0.0	-34.00	-65.00	-66.00	-70.00	?
Total or Average	123	1372	20.83	78	34	11	0.0	-17.82	- 0.98	-13.41	- 4.27	I S
PLAINVIEW	18	198	31.15	10	8	0	0.0	-19.89	+ 2.93	-21.42	+ 1.87	I S
LEVELLAND	13	68	17.72	10	1	2	0.0	- 9.09	- 1.36	- 2.94	- 5.85	?
Grand Total or Average	154	1638	21.80	98	43	13	0.0	-17.70	- 0.52	-13.95	- 3.59	I S

The outcome table generally indicates the fluctuation patterns in sales over a five-week period, implying that IB decreased the sales in weeks with the closing but would increase it again in the following week. To the convenience of managerial decisions, IB, in this case, is bundled with the length of store hours; thus, the manager can take a decision on the level of impulsive purchase by increasing or decreasing store hours. However, such a concept might end up misleading the managerial decision. For example, according to the results, the author suggested that planned purchase is strong enough to pull sales; therefore, IB shall be discouraged, implying the managers shall not increase store hours given that the overall increase it pulls is not sufficient to offset the loss occurring during the holiday weeks. Nevertheless, this is not the truth. The conclusion is drawn based on results computed by merely averaging the overall sales through all included samples; however, such an approach loses cognisance of the fact that each establishment entails a unique factor. While IB can lead to a loss for the Florist establishment, IB may pull more sales than the reduction for the Furniture establishment due to the holidays. As the

numbers are simply summed up and averagely weighted, the difference between individual establishments continues to be nebulous. By this means, although such a concept is developed for managerial concerns, it confuses managers using this concept on whether it is compatible with their own business, as such a definition varies heavily across different contexts.

2.3.4 Impulse Mix

In wake of the development in IB research, studies have noticed a wide range of issues, such as economic, personality, time, shopping location, culture and gender that can have an impact on IB. Some had started to view IB as a multi-perspective concept instead of a product-oriented element. For example, Stern (1962) introduced an impulse mix and viewed impulse buying in different forms. Stern argued that IB varies not only among different consumers who are considering the purchase of the same item but also for the same consumer buying the same item, albeit under varying buying situations. Thus, it may lead to a “mix” of several forms of impulse buying, as opposed to a single form. Basically, four broad forms of IB were suggested by Stern.

The first one is *Pure Impulse buying*. As suggested by Stern (1962), it is used to indicate purchases that consumers make without any planning or forethought. It breaks normal buying patterns or decision-making rules. Han and colleagues (1991) described this type of IB as escape buying that is caused by a sudden urge to buy something.

According to Stern, the second form of IB is *Reminder Impulsive Purchase*. A reminder impulsive purchase occurs when an item reminds the consumer of their previous experience and underpins the need for restocking, for example, buying telephone credits when notice it is running out. An experimental study by Liao and colleagues (2009) confirmed the distinction between pure impulse buying and reminder impulse buying.

Unlike the former, it was found that reminder impulsive buyers are likely to engage with more rational motivations and utilitarian goals and less with regret response.

The third form of impulse buying posited by Stern is *Suggestion Impulse buying*. Different from reminder impulsive buyer, suggestion impulsive buyers have no relevant previous knowledge or experience before coming across a product. Consumers decide to

purchase, or are motivated to purchase the product due to the suggestion such as product design. When compared to pure impulse buying, suggestion impulse buying could be toughly rational or functional purchase; therefore it is relatively impervious to emotional motivations. Many extant researchers have suggested that impulse buying is a fashion-oriented impulse buying with an emphasis on merchandises (Deaux, 1986; Han et al., 1991).

The fourth and last form of impulse buying is *Planned Impulse buying*. This term is used to describe a purchase that depended upon sales conditions, coupon offers, and the like. Planned impulsive consumers generally have no prior plan about making the purchase of an exact item, and wait to check what is available at what prices before making a decision. This form is similar to Nebitt's (1959) views on IB in terms of intelligent shopping. Rather than making shopping plans, smarter shoppers search for and take advantage of in-store promotions, thereby maximizing their buying power.

Stern's concept or method in defining IB captures one essential property of IB, the degree of impulsivity involved, although it focuses on the role of external stimuli as his conceptualization of impulse purchase is premised on the fact that the making of an IB is associated with the consumer's exposure to a stimulus. Generally, as described by Stern (1962), as impulsivity increases, purchase tends to be purely based on impulse buying. Such view is further empirically supported by studies from Liao and colleagues (2009) that differentiated between pure impulse buying and reminder impulse buying by adopting an APC approach (Antecedents, Process and Consequence approach). As there was an increase in impulsivity, pure IB buyers were found to engage with more emotional motivations and hedonic goals as compared to reminder IB buyers, whose purchase decisions are relatively more rational and utilitarian. In addition, Liao's work referred IB to personality perspectives by gauging the interaction effects between the stimulus, sale promotion and consumer traits. According to their study, premium promotions encourage more reminder IBs among hedonic seekers as compared to prudent buyers.

It is irrefutable that Sterns' work has greatly improved the understanding of IB by

identifying four distinct forms of impulse buying. However, the concrete conceptual properties from an individual level difference perspective continue to be nebulous. In this regard, the impulse mix provided more of a theoretical framework for IB conceptualization than an operational concept that is ready to be used.

2.3.5 Intention typology of impulse buying

In consonance with the multi-perspective understanding on IB, a similar approach to “impulse mix” in defining IB has been developed by Kollat and Willett (1967) by using a typology matrix of operational intentions and outcomes of a purchase. They believed that unplanned purchase can be specified and distinguished from other types of purchase by making comparing alternative purchase intentions with actual outcomes. Hence, Kollat and Willett (1967) paired all operational intentions typology and outcome typology and observed that unplanned/impulsive purchase could include the purchase of both brand and product without necessarily recognising any of them.

Their intention typology proposed by Kollat and Willett (1967) consists of the major stages of planning that presumably exist before the customer is exposed to in-store stimuli. This may include:

1. Product and Brand. Before entering the store, the shopper knows both the product and brand of the purchase;
2. Product only. Before entering the store, the shopper knows which product he/she wants, but has not decided on the brand;
3. Product class only. Before entering the store, the shopper knows the class of product that he/she intends to purchase, but has not decided on the products in that class;
4. Need recognized. Before entering the store, the shopper recognizes the existence of a problem or need but has not decided which product class, product or brand that he/she intends to purchase.

5. Need not recognized. Before entering the store, the shopper does not recognize the existence of a need, or the need is latent until he/she is in the store and has been exposed to its stimuli.

Similarly, the outcomes typology comprises of the major kinds of behaviour that could potentially result from shopping. This may be inclusive of:

1. Product and Brand purchase;
2. Product and Brand not purchased;
3. Product purchased, Brand not purchased.

Impulse buying is defined as the purchase of both brand and product without the recognition of demand, as illustrated by “category 9” in Table 2.1.3. It is notable that the investigation was conducted in terms of a field study rather than a survey. In this way, the concept is more concerned with a comprehensive account of the investigation process than with their typicality in a large universe.

Table 2.3.5 An Operational Intentions-Outcomes Matrix. Adapted from Kollat and Willett (1967).

An Operational Intentions-Outcomes Matrix

Intentions	Outcomes		
	Product and brand purchased	No purchase	Product purchased; Brand not purchased
Product and brand mentioned	1	2	3
Product only mentioned	4	5	
Product class mentioned	6	7	
Need recognised	8		
Need not recognised	9		

Against the backdrop of this IB concept, Kollat and Willett’s (1967) work elicits research attention onto individual issues by setting consumer as one of their independent variables. They opined that consumers who made the purchase on impulse would differ

in their susceptibility from those who buy as per their shopping plans. Kollat and Willett (1967) attempted to test such hypothesis and to discover which customer characteristics are precisely associated with differential susceptibility to unplanned purchasing. Unfortunately, the research yielded misled results despite being farsighted. Their statistics failed to capture the importance of personalities: with the measurements borrowed from French (1953) and Brim (1962), the empirical table revealed an insignificant relationship between the personalities, such as impulsiveness, self-confidence, or desire for certainty, and IB (at a significant level of 0.05). Instead, transaction size and structures, such as the number of products purchased, had been notified as correlated to IB. Such findings are partially contradictory to later studies which proved that impulsivity remains one of the most influential issues to IB (Rook, 1987). Further evidence would be provided later. Nevertheless, it is noteworthy that Kollat and Willett's (1967) work has provided great insights on in-store stimulus, especially in terms of their influence on the reminder and planned forms of IB. As noted by them, most unplanned purchases represent out-of-stock same brand or inventory-addition same brand purchase. In-store stimuli typically remind shoppers of present or future needs instead of evoking new needs. They suggested that same brand purchases may have actually been planned; others were probably precipitated by in-store stimuli. Although Kollat and Willett's (1967) work came concluded that the difference among consumers is only found in terms of external stimulus, these results do not dilute the essence of their insights on testing individual-level differences. Their work was found to be prescient and inspired subsequent interests in terms of customer differences. For instance, Iyer (1989) confirmed that customers' actual IB behaviours were functioned by store layout and time available, which was later notified as being predicated on consumer impulsivity with regard to lack of perseverance (Youn and Faber, 2000). In a similar vein, Kacen and colleagues (2012) suggested that emotionally appealing products, which reflect hedonic values, encourage more impulse buying behaviour than others. All these findings supported Kollat and Willett's hypothesis on customer commitment. That is, although certain stimulus can be strong predictors of IB, it is the psychological process

behind such stimulus that matters more in the context of IB. In particular, these psychological are known to be rooted in various personalities.

To sum up, at this stage, IB is still viewed as exposure to in-store stimuli. However, attentions began to be elicited on the underlying psychological process behind such stimulus. The in-store stimulus is viewed as psychological proxies of such process. Impulsive buyers are viewed as *hedonic-seekers* and are *emotional* in decision making. Generally, they *lack premeditation* in their *re-stock purchase*; their choices are contingent on the in-store stimulus that delivers, in their perception, *hedonic value* or *shopping enjoyments*. Besides, although consumer commitment is yet to be proven, it is suggested that personality may act through interfacing with certain psychological proxies (Abratt and Goodey, 1990).

Phase 2: Individual Difference Focus

Previously, Kollat and Willett's (1967) study had confirmed in-store stimulus as psychological proxies, particularly in the *Remind* and *Planned* form of IB, hypothesising consumer commitment for further researches (Kollat and Willett, 1969). Subsequent works have extended such a viewpoint. IB is believed to be a purchase rooted in unique consumer characteristics and is different from an unplanned purchase by virtue of its complicated psychological process. Impulse buying decisions are "unplanned" and "thoughtless", but not all unplanned purchases are decided impulsively. Equally, unplanned purchases may be made absolutely rationally, while impulse buying may be acted upon with negative outcomes (Dittmar et al. 1996).

2.3.6 IB as a Result of Emotion

One seminal work from Weinberg and Wolfgang (1982) discovered that IB can be empirically identified by measurements on consumer emotions. In general, the process of impulse buying can be dissected into several stages, each of which may be characterized by a higher or lesser degree of impulsivity. In this regard, the researchers' work focused on the activation and stimulus stages. Subsequently, they defined IB on the basis of affective, cognitive and reactive determinants of consumer behaviour:

Affective: High activation of the consumer;

Cognitive: Little intellectual control of the buying decision;

Reactive: Largely automatic behaviour actuated by a special stimulus situation.

Armed with this concept, Weinberg and Wolfgang's study had arrived at two extraordinary conclusions. At first, in line with their hypothesis, their results proved that IB could be attributed to a complicated mix of emotions, which refers to, in consonance with the viewpoint of Reykowski (1973), the unique strength (intensity), direction (directional symptom) and quality (content) of emotion. This conclusion is also emblematic of two empirical facts. One is from the Psychometrics of consumer's self-perception, that is, how consumers label themselves. The other is from the mimical expression of consumer based on the FAST (Facial Affect Scoring Technique; Ekman 1978). Both reflected the same IB emotional dimensions: *delightful*. In particular, impulse buyers assess themselves as more dependent on hedonics values than others. Such delight was subsequently substantiated by consumers in the form of *interesting, joy, enthusiasm, joy and glee*. Except, in the second place, the study also confirmed that information processing plays a part in the buying decision, considering the fact that there is a significant relationship (at 0.05 level) between buying decision made and the contributing cognitive factor, namely, "intended use of a decals", although such role is only of limited magnitude (coefficient < 0.3) and is supposed to reduce when measuring the actual behaviours.

Many later empirical studies have further supported the emotion basis of IB. A study from Herabadi and colleagues (2009) suggested that a high level of arousal of *positive emotion* and *hedonic considerations* from consumers are strong indicators of following impulsive purchases in the marketplace. In addition to this clue, they have created emotion-related scales to measure IB and obtained consistent results from longitudinal designs. Similarly, in the study conducted by Verplan and Herabadi (2001), a 20-item scale to measure general impulse buying tendency was validated, of which affective aspects, such as *feelings of pleasure, excitement, compulsion, lack of control, regret*, were found to be significantly associated with IB frequencies.

Weinberg and Wolfgang's (1982) work is the first that provided empirical support to the

consumer commitment hypothesis of Kollat and Willett (1969) and improved Sterns' IB forms by including emotional basis. On the one hand, such basis clearly provides conceptual properties, such as *hedonic seeking*, *lack of control*. On the other hand, it also helps develop reliable items in measuring IB tendencies.

2.3.7 Dual Process underlie IB

Unlike other typologies of purchase behaviour, Strack and colleagues (2006) did not categorize a particular behaviour as purely "impulsive" or "reflective". They assumed that both reflective and impulsive process contributes to the act of IB, considering both impulsive and reflective determinants to the conceptual property of IB.

Before learning about how Strack and Colleagues' (2006) dual-process model contributes to the IB concepts, it is noteworthy that, as analysed by contemporarily dominated dual-process models such as Evan and Stanovich (2013), a true dual-process theory distinguishing two types of the process will imply the engagement of distinct cognitive and neurological systems. In this manner, it denies a generic form of a dual system of clusters attributes in ways that they are not always sustainable (Evan 2006; Stanovich 2004). In particular, based on Evan and colleagues' view, Type 2 processing is distinguished from autonomous Type 1 processing on the basis of its nature: involving cognitive decoupling and hypothetical thinking; as well as by its strong loading on the working memory resources that it requires. Dual processing theories are default-interventionist in structure based on this point. It assumes that fast Type 1 processing generates intuitive default responses, on which subsequent reflective Type 2 processing may or may not intervene.

Unlike the approach adopted by Evan and Stanovich (2013), Strack and colleagues (2006) offered a different view of the dual process, in which case the impulsive process and reflective process operate in parallel and can influence each other at various stages of processing (Schwarz and Clore, 1983; Tversky and Kahneman, 1974). Unlike the other dual-process model that stop at representations, feelings, and judgments, Strack and colleagues integrated behavioural processes into the cognitive and affective structure of the dual process. Therefore, a RIM (Reflective and Impulsive Model) was

developed to describe a dual-system model of consumer IB behaviour. When the impulsive system is conceptualized as a network in which information is processed automatically through a fast and parallel spread of activation alongside associative links between contents, the reflective system serves the regulatory and representational goal that complement the functions of the impulsive system. A final pathway added to connect the dual-process to overt behaviour, which consists of behavioural schemata that are proposed to connect frequently co-occurring representations with their antecedent conditions as well as their consequences. Generally speaking, impulsive and reflective source such as goals, perceptions or even behaviours may activate a number of different schemata at any given point in time. Which of these schemata leads to behaviour is contingent upon the relative strength of their activation. While both impulsive and reflective process can lead to the activation of a behavioural schema, they differ in terms of how this activation is undertaken.

Whether the reflective process and impulsive process operate in parallel or in a default-intervention manner remains a matter of contention, which may require volumes of discussion. However, one common finding is that one process is distinct to the other with regard to its involved cognitive and neurological systems. Particularly, the neurological empirical indicates the unique cognitive process behind each of the dual processes. For example, following the memory system associated with Hippocampal, research finds that Type 2 process only engages when people have both cognitive capacity and motivation (Smith and DeCoster, 2000). Further evidence is provided by the findings of Goel (2008), Liberman (2007), Wixed (2007), De Neys, Vartanian, and Goel (2008), Liberman (2009) and Tsujii and Watanabee (2009). Put succinctly, studies have shown that different areas of the human brain get activated upon the detection of belief-logic conflict. Prefrontal and frontal cortical regions are activated when Type 2 process is required, while the limbic system is activated when the Type 1 process is required (McClure and colleagues, 2004). Thus, defining IB with the dual-process theory depends on a study of its cognitive process based on its neurologic. In early studies, the cognitive process, more specifically the information processing coming under the purview of consumer cognition, had led to

two findings. One is in line with the views of Weinberg and Gottwald (1982), as per which consumer cognition is emotion biased (Verhagen and Van Dolen, 2011). This implies that IB is attributed to the consumer experiencing/processing a positive or negative emotion/information (Strack, Werth and Deutsch, 2006). The other finding suggests that the outcomes from the dual-process are predicated on the broad pool of control resources, such as cognition resource. IB is believed as a result of a loss in self-control or of self-depletion (Vohs and Faber, 2007). However, both views are open for further testing for its neurologic basis as. Although While some recent researches have considered such neuroscientific evidence, they made contradictory conclusions (Vohs and Faber, 2007; Raab, Elger, Neuner and Webber, 2011).

Despite the contemporary gaps in dual-process theories, the RIM provides important insights on IB concepts. It elucidates how IB is attributed to a two-factor decision-making system, such as the dual processes, and the mechanisms embedded in each system that alter the final outcome. Especially, under a reflective system, or Type 2 process of the RIM, the behaviour is determined by a reasoned act that functions based on the *desirability* and *feasibility* of behaviour (Ajzen, 1991). These two determiners fundamentally serve as principles of rational decision making for the purpose of utility. More specifically, it suggests that consumers would engage in a buying intention/act if the purchase is perceived as feasible and its outcome is evaluated as positive. Link it to Stern (1962), a reflective system may play an important role in *planned form impulse buying*. Usually, this searching and decision process requires a deep level of information process not only about the physical or sensory features but also concerns relating to pattern recognition and the extraction of meaning associated with prior learnings, for example, making an evaluation on the discount to determine whether it is better than previous offers. By *looking for such varieties* in the product, a temporal gap between a behavioural decision and action can be pervasively noticed among planned IBs. On the other hand, under the impulsive system, or Type 1 process, the behaviour is determined by homeostatic dysregulation as well as the motivational orientation. Specifically, the homeostatic dysregulation triggers IB when consumers experience a

deprivation of need which had been satiated by the *prior shopping experience*. Thus, once consumers encounter the same state of deprivation, the behavioural schemata and conceptual content linking to early shopping experience would be activated and create a specific disposition to act. For instance, the food-related stimulus will be recognised more easily under food deprivation (Aarts, Dijksterhis and De Vries, 2001). The other determinant is that of motivational orientation. Strack and colleagues proposed bidirectionality (toward vs. avoid) to describe a reverse causal influence on IB. When the orientation *toward approach* facilitates a decline in the distance between the consumer and another aspect of the environment, the *avoidance orientation* leads to an increase in distance between the two. The *toward orientation* approach encourages processing of *positive information*, the experience of *positive affect* as well as the execution of approach behaviour. In contrast, *avoidance orientation* pertains to the processing of *negative information*, the experience of *negative affect* as well as the execution of avoidance behaviour.

2.3.8 IB Personalities

Impulsivity

Consumer impulsivity is another most frequently used item in IB studies. Impulsivity is an important psychological construct which appears in every major system of personalities and is commonly acknowledged to play a fundamental role in Borderline Personality Disorder (BPD) (van Zutphen and colleagues, 2015). However, it is also a multi-aspects item which can be hardly defined. As Depue and Collins (1999) concur, “impulsivity comprises a heterogeneous cluster of lower-order traits that includes terms such as impulsivity, sensation seeking, risk-taking, novelty-seeking, boldness, adventuresomeness, boredom susceptibility, unreliability, and unorderliness (p.495)”. Therefore, it can be noticed that there are several ways to define impulsivity. These definitions vary in their theoretical background and labelled terms; however, they describe similar constructs of impulsivity. IB studies also adhere to such tradition,

wherein efforts in defining IB can be noticed from various impulsivity-perspectives. Hence, in order to investigate the types of impulsivity items that are involved in IB, it would be prudent to commence from the study of impulsivity. Table 2.3.8 provides a brief review of previous impulsivity concepts.

Table 2.3.8 Review of Impulsivity Concepts and its use in research of impulse buying

Literature	Concepts of Impulsivity	Relevant IB Research
Eysenck and Eysenck (1986)	A subscale of the second-order personality trait extraversion	Rook and Hoch (1985); Rook (1987); Beatty and Ferrel (1998); Ramanathan and
Eysenck and Eysenck (1977); Rocklin and Revelle (1981).	Subdivided into four specific dimensions: Narrow impulsiveness, risk-taking, non-planning, and liveliness.	Menon (2006); Sharma and colleagues (2010)
Eysenck and Eysenck (1985)	Consists of two components: adventuresomeness and impulsiveness	
Buss and Plomin (1975)	Included impulsivity, emotionality, activity and sociability into a model of temperament.	N/A
Zuckerman and colleagues (1991)	Discussed impulsivity in terms of a general model of personality.	N/A
Cloninger and	An aspect of novelty-seeking:	N/A

colleagues (1993)	<ol style="list-style-type: none"> 1. The initiation of approach behaviour in response to novelty; 2. Extravagance in approach to reward cues; 3. The tendency to quickly lose one's temper. 	
Tellegen (1982)	<p>A personality system that includes three higher-order factors:</p> <ol style="list-style-type: none"> 1. Positive emotionality; 2. Negative emotionality; 3. Constraints. 	<p>Gardnar and Rook (1998); Youn and Faber (2000); Thompson and Prendergast (2015)</p>
Patton at colleagues (1995)	<p>Attentional impulsiveness; Motor impulsiveness and non-planning.</p>	
Newman and Wallace (1993)	<p>Behaviour arises from three separate components:</p> <ol style="list-style-type: none"> 1. Behavioural Activation System; 2. Behavioural Inhibition System; 3. Non-specific Arousal System. <p>, which resulted in three distinct pathways to impulsive responding:</p> <ol style="list-style-type: none"> 1. Normal impulsivity: BAS>BIS with highly reactive NAS; 2. Anxious impulsivity: BIS>BAS with highly reactive NAS; 3. Deficient P-constraint (Lynam, 1996): NAS dominance. 	<p>O'Guinn and Faber (1989); Ramanathan and Menon (2006); Verplanken and Sato (2011)</p>
Dickman (1990)	<p>Functional impulsivity: rendered optimal by the individual's other personalities;</p>	<p>Rook and Hoch (1985); Ben-David and Bos (2017);</p>

Dysfunctional impulsivity: there is a source of difficulty

Hausman (2000); Fenton-O'Creerv and colleagues (2017)

Once impulsivity received academic attention, it soon evinced the interest of psychometrics who aimed to measure the psychological dimensions of an individual. Nevertheless, the multi-facets nature of IB caused confusion among them. Even one of the greatest psychologists, Eysenck, had initially located impulsivity under unappreciated items before he finally confirmed its two key components: venturesomeness and impulsiveness (Eysenck and Eysenck, 1985). In the beginning, their work considered impulsivity as a subscale of one-second order personality trait extraversion, which, in conjunction with neuroticism and psychoticism, constitutes the three-factor theory of personality (Eysenck and Eysenck, 1968). However, it was subsequently replaced in Eysenck and Eysenck (1975) through the inclusion of liveliness and sociability in extraversion. This raised a couple of criticisms on the measurements as among researchers such as Rocklin and Revelle (1981). Basically, the replacement of impulsivity items leads to unidimensional scales of sociability and undermined the importance of impulsivity to extraversion, which, in turn, led to entirely different patterns of results in a variety of paradigms than sociability. Therefore, in subsequent studies, Eysenck and Eysenck (1977) divided impulsivity into four new dimensions: narrow impulsiveness, risk-taking, non-planning, and liveliness (Eysenck and Eysenck, 1977). On the basis of these dimensions, they identified that impulsivity may comprise two main components that were mentioned early. In particular, narrow impulsiveness was found to be strongly correlated with neuroticism and psychoticism, albeit without extraversion when all the other dimensions, represented by venturesomeness, were found to be highly correlated with extraversion.

In addition to Eysenck and Eysenck's (1985) view of impulsivity, Rook and Hoch (1985) identified five elements of impulse buying that are associated with the psychological process of consumers: 1) A sudden and spontaneous desire to act; 2) A state of

psychological disequilibrium; 3) The onset of psychological conflict and struggle; 4) A reduction in cognitive evaluation; and 5) Lack of regard for the consequences of impulse buying. Subsequently, Rook (1987) defined IB as:

“Impulse buying occurs when a consumer experiences a sudden, often powerful and persistent urge to buy something immediately. The impulse to buy is hedonically complex and may stimulate emotional conflict. Also, impulse buying is prone to occur with diminished regard for its consequence.”

In line with Eysenck and Eysenck (1985), such IB concept emphasised two key properties of impulsivity, namely Impulsiveness and Venturesomeness, albeit with detailed dimensions. While impulsiveness implies that IB buyers generally make a purchase without putting any thought or consideration into the purchase, (Puri, 1996; Khachatryan et., al, 2018) venturesomeness indicates the hedonic complexity of IB. Such complexity can in various forms and Rook’s concept mainly emphasised the role of shopping enjoyments (Beatty and Ferrel, 1998). Studies have shown exogenous variables that imbue hedonic value, for example in terms of shopping convenience and shopping enjoyments. This, in turn, would have an impact on endogenous variable such as consumers’ affection, the urge to buy, or, whether or not an IB occurs. Notably, such preference in shopping hedonics, as suggested by Ramanathan and Menon (2006), tends to be *chronic*.

In addition, it also can be noticed that, if linked to Sterns’ IB framework, Rook’s concept provides a detailed description on the pure form of impulsive purchase, but it might not be compatible with the other three forms. One key property highlighted by Rook and Hoch (1985) in IB is its involvement in a reduction in the cognition process. Under this condition, Stern’s planned and suggestion form of IB may be paradoxical as both of them require a certain level of cognitive evaluation in order to ensure that the purchase maximises consumer utilities. Therefore, strictly speaking, according to Rook’s view, the planned form and suggestion form of IB is some form of variety seeking purchase and not quite an actual IB. Indeed, a later study by Sharma and colleagues (2010) confirmed such a view. When the pure IB buyers and variety-seeking buyers are both significantly

correlated with consumer impulsiveness and relative situational factors, they differ significantly in terms of the level of consumer cognition: variety-seeking purchase has a high level of product involvement whereas IB requires little cognition on product proxies. Meanwhile, Dickman (1990) proposed a two-dimensional theory of impulsivity based on an information processing approach to personality. Under this approach, impulsivity is categorised as functional and dysfunctional based on its positive or negative consequences. According to Dickman, functional impulsivity is associated with enthusiasm, adventuresomeness, activity as well as “an ability to engage in rapid error-prone information processing when such a strategy is rendered optimal by the individual’s other personality traits” (p.101). On the other hand, dysfunctional impulsivity is associated with disorderliness, a proclivity to ignore hard facts when making decisions, acting without forethought, and “a tendency to engage in rapid error-prone information processing because of an inability to use a slower, more methodical approach under certain circumstances” (p.101).

Relevant IB studies consider functional or dysfunctional IB to mainly focus on whether consumers experience *difficulties or struggles* when making a purchase, which is in alignment with the third element of Rook’s concept mentioned by Rook and Hoch (1985), as well as mood regulations. Generally speaking, while it is possible that the functional IB buyers not to experience struggles, the dysfunctional IB buyers may indeed feel emotional dissonances. Such struggles are usually linked to perceived economic loss (Ben-David and Bos, 2017). From this view, functional IB may concern the planned form or remind form IB from Stern’s where positive utility outcomes can be expected and dysfunctional IB may denote the pure form of IB as the few reflections about the ramifications. Besides, consumer is also found to use IB as a strategy of mood regulation that accompanies both functional IB (Bayley and Nancarrow, 1998; Hausman, 2000) and dysfunctional IB (Joireman, Kees, and Sprott, 2010). As per Fenton-O’Creedy and colleagues (2017), IB is the result of a failure of self-regulation in relation to long-term goals and as a strategy for mood regulation. Effective emotion regulation may mitigate the adverse consequences of the propensity to IB. Notably, their statistics have equipped

the scales from Carver and White (1994) which are used to respond to the BAS (Behavioural Activation System) and BIS (Behavioural Inhibition System). This raises concerns of another theory of impulsivity put forth by Gary and McNaughton (2003), as well as Newman and colleagues (Newman and Wallace, 1993; Wallace, Newman and Bachorowski, 1991).

In a view of Reinforcement Sensitivity Theory (RST) developed by Gary and McNaughton (2003), individuals differ in reactivity to appetitive stimuli and self-regulation in relation to the threat of punishment, in terms of two distinct neurobiological systems: the BAS and BIS. While the BAS is responsible for developing environmental cues concerning reward or non-punishment and its activation increases approach behaviours towards the stimulus, the BIS is responsible for the environmental cues relating to punishment and non-rewards; its activation would encourage passive avoidance behaviour or the extinction or inhibition of on-going behaviour. Thus, it implies three unique pathways to impulsive responding that later proposed by Newman and Wallace (1993). One is dominated by the BAS, one is dominated by the BIS, and the third is called deficient P-constraint by Lynam (1996) seen in psychopaths responding under competing for reward and punishments contingencies.

As far as IB domain is concerned, the effects from BAS can be pervasively notified. Such results are expectable as, while a highly BAS is prone to anxiety and stress, the BAS is directly prone to impulsivity. Consumers with high BAS stores are found less able to resist themselves from approaching an urge to purchase (Ramanathan and Menon, 2006; Verplanken and Sato, 2011). Especially, such urge or desire is often triggered by a hedonic stimulus. Hedonic stimulus provides the momentum for consumers to override their self-regulation and lead to enhanced shopping desire over time. In addition, a high level of BAS stores also indicates IB consumers can be better trained by rewards rather than punishments. For example, though punishments, such as financial harms or obesity, can be anticipated quite soon, the tendency of impulsive shopping styles of consumers does not change significantly (Verplanken and colleagues, 2005). In contrast, the presence of *hedonic stimulus* is relatively effective in altering IB behaviours and

thereafter compulsive buying behaviours (O'Guinn and Faber, 1989; Grougiou, Moschis and Kapoutsis, 2015).

Other studies in impulsivity can also be noticed, such as the ones from Buss and Plomin (1975), Zuckerman and colleagues (1991), Cloninger and colleagues (1993), Tellegen (1982), and Patton and colleagues (1995). Although these studies vary in their theoretical models and methods, their conclusion generally indicates similar impulsive properties but are labelled in different terms. Such fragments were later summarised by Whiteside and Lynam (2001). Four distinct personality facets had been identified: *labelled urgency, lack of premeditation, lack of perseverance* and *sensation seeking*. Little IB works so far has been made in line with Whiteside and Lynam (2001), but it can be apparently observed that such facets co-ordinate with early IB concepts in terms of *enjoyment-seeking, shopping urges or unplanned natures* (Rook, 1987).

Self-control

In addition to IB researches in terms of consumer impulsivity, some have expressed spoken about self-regulation/control traits in governing behaviours, of which the Baumeister and colleagues' (1994) Strength Model of Self-control provided extraordinary insights to IB.

The self-control of human trait refers to the ability of human beings to alter their own responses; thus impulsive behaviours are viewed as a consequence of *failure in self-control*. There are several ways in which self-control can break down but as suggested by Carver and Scheier (1981), it can basically be distinguished between underregulation and misregulation. For instance, when the underregulation concerns the situation of one failure to exert self-control, the person does not bother or manage to control the self; the misregulation involves the exertion of control over oneself, but this is done in a misguided way and the outcome is not as previously expected. Subsequent works of Carver and Scheier (1982) indicated three key ingredients of self-control based on the Feedback-loop models suggesting three possible pathways for both misregulation and underregulation failure in self-control. The first ingredient is that of *lack of standards*, such as goals or other conceptions of possible states. Kinds of IB literature have linked this ingredient in the form

of consumers' variety-seeking behaviours (Sharma et. al, 2010; Punj, 2011). The second ingredient is *monitoring* that concerns the person monitoring his/her distance from the current status to the desired endpoint. This particularly entails "Keeping close track of one's action and states is often vital to successful self-regulation, and so when people cease to monitor themselves they tend to lose control The failure to judge one's abilities accurately may also impede successful self-regulation", as suggested by Baumeister and Heatherton (1996). Survey data by Sharman and colleagues (2010) indicates that self-monitoring is significantly and negatively associated with IB and regulates the relationship between situational stimulus and IB.

The third ingredient of self-regulation is included in the operating phase of the Feedback-loop Model; some process is set in motion to change the current state when the test phase indicates the current state falls short of the standards. Under this phase, self-control refers to a controlled process that overrides the typical consequences of an impulse as opposed to preventing the impulse from occurring. This ingredient serves as the basic manner of the Strength model of self-control, which is subsequently used in many IB studies.

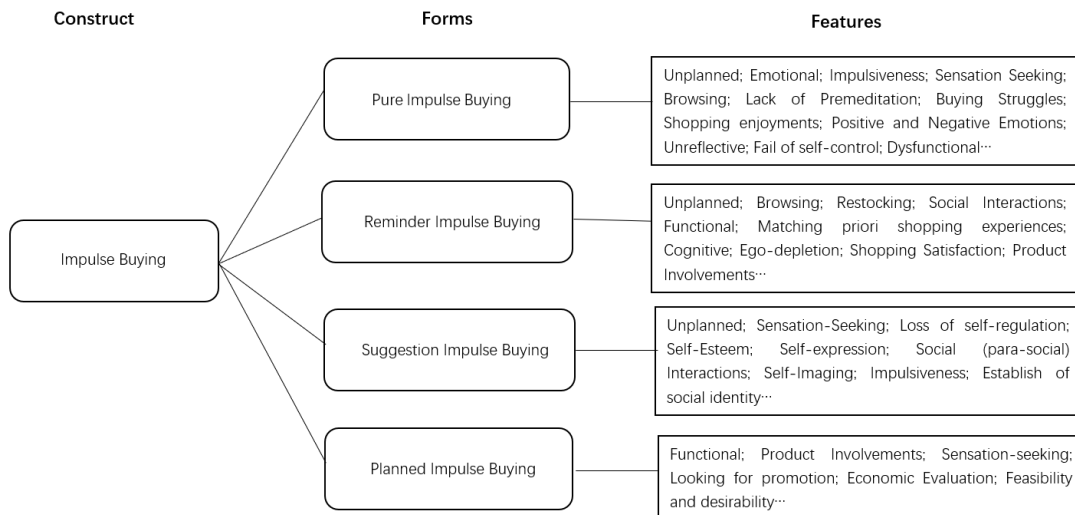
The strength model of self-control suggests that one's self-control depends on a limited energy resource that leads to a state of ego depletion (Baumeister et al., 1994; Baumerister, Vohs and Tice, 2007). Unlike previous models, such as the ones proposed by Shiv and Fedorikhin (1999), the strength model views self-control to occur when emotion determines behaviour more than cognition. Subsequent experiments from Vohs and Faber (2007) have emphasised such a view. In particular, by depleting the participant's self-regulatory resources in terms of suppression, it was found that ego-depleted participants experienced a stronger urge to spend more money on unanticipated buying situations as compared to those without suppression feelings. When self-regulatory resource depletion forecasts the spontaneous IB urge, the interaction of buying impulsiveness and self-regulatory resource conditions predicts the actual impulsive spending.

2.4 Impulse Buying Features

Through a revisit to seminal papers in IB conceptualisation, this section finds that IB remains a fragmentary concept equipping various theoretical tools and in different forms. However, it can be noticed that these concepts could be interlinked. To begin with, all the concepts are originated from IB personalities, which are subsequently developed in various ways. Early waves work explains the unplanned perspectives of IB consumers in the form of external stimulus. Thus, by means of taxonomical models, they were able to figure out certain types of stimuli, such as the type of shopping departments, shopping locations or product designs. Such viewpoints illuminate the difference between planned and unplanned purchases. However, as was noticed later on by Stern (1962), there are various forms of unplanned purchases as well. In this way, the second wave of IB conceptualisations attempts to define the difference between IB and the other forms of unplanned IB. An important insight made during this phase of IB research focuses on the personality, where it fills the gap in taxonomical IB concepts reflected by the inconsistencies across different samples. To that end, these studies tried to define IB properties with relevant IB traits and focus on the underlying psychological process of an IB purchase. Hence, a wide range of IB traits turns to have significant influence. In addition, these concepts are interdependent. To illustrate, Baumeister and colleagues' (1994) and Vohs and Faber' (2007) self-control theory, Rook's (1987) consumer impulsivity theory and Strack and colleagues' (2006) all reflect a commitment to the emotional basis of IB that was elucidated by Weinberg and Wolfgang (1982). Notably, Weinberg and Wolfgang's arguments on affective IB correspond to Stern's (1962) impulse mix, which, in turn, has a strong implication on a wide range of IB properties, such as the functional IB vs. dysfunctional IB (Dickman, 2000) or BAS vs. BIS (Newman and Wallance, 1993). The diagram below depicts a straight forward view of the possible linkages among these concepts (Table 2.4.1).

On the other hands, these linkages also indicate different forms of impulse buying may constitute different conceptual constructs. For example, pure impulse purchase may involve limited cognitive processing during making an IB decision while planned impulse purchase may need consumer's evaluation that functioned by cognitive processes. Thus, the similarity and difference among different IB forms can be identified and justified based on the linkages among IB forms and other conceptual frameworks. In this view, these frameworks, as well as their linkages, provide such a fertile ground with which a comprehensive concept of IB can be developed. Figure 2.4.2 presents an overview of the components of different IB forms.

Figure 2.4.2 Framework of Impulse Buying Forms



2.5 Impulse Buying Stages

While the above framework presents key features of different forms of Impulse buying, it should be noticed an impulse buying is dynamic. IB comprises its unique antecedents, triggers, information processing and outcomes. Such, these features, or components of impulse buying, may engage at different stages of an impulse buying and stands for different meanings. For instance, browsing behaviours may take place before an IB and Impulsiveness may function IB during making an IB. Furthermore, even the same feature may come into effects at different stages of different forms of IB. Social interaction may

happen before making a suggestion impulse purchase as consumers may communicate their ideas about a product that conveys social meanings. But, in planned impulse buying, social interactions are more likely to take place when are making the purchase because consumers may engage with sale staffs to know the best offer at that time. In addition, IB components may play different roles. Some IB components may stand for psychological items, such as buying impulsiveness, while some may stand for behavioural outcomes, such as browsing behaviours. It would be necessary to distinguish psychological items from the behavioural outcomes that they underpin in the meantime, which in return provides a comprehensive account of Impulse buying, comprising both the psychological processes and behavioural outcomes.

Hence, with the aims: 1) Reflects the dynamic nature Impulse purchase; 2) Disclose connections between psychological process and behavioural outcomes, the following sections introduce and takes advantages of the field theory (Lewin, 1951; Burnes and Cooke, 2013).

2.5.1 The Field Theory in Psychology

Drawing on the field theory from physics, Lewin (1951) extended the concept of “space” into psychology domain in order to help decipher and elucidate the behaviour of individuals. It is suggested that an individual’s behaviour can be understood and predicted through constructing one’s “life space” comprising of psychological forces that influence their behaviour at a given point in time (Diamond, 1992). Factors in the life space, e.g. their needs, emotions or quasi-environment cues create a psychological tension which, in turn, creates motivations to engage or disengage into a behaviour that reduces such tension. The theory, which was initially developed to understand individual behaviour, was later equipped by studies in group behaviours (Burnes, 2007). Its implications in consumer research can be widely noticed in Kassarijian (1973). To integrate conceptual fragments in Impulse Buying (IB) research and provides an operational IB construct, this section applies tools from the field theory for its advantages in multi-disciplinary research (Burnes and Cooke, 2013).

2.5.2 The Gestalt psychology

The methodology applied in field theory is extraordinary; however, it is quite difficult to understand if one does not have prior knowledge in Gestalt topology, which involves complex mathematical representations of the psychological situation. Thus, in order to help understand the logic of field theory along with its implications in constructing an IB concept, this section at first introduces the Gestalt psychology, which serves as the theoretical framework for the field theory.

The genesis of Gestalt psychology was seen in Germany in the early 20th century (Köhler, 1967; Marrow, 1977). It is held, as stated by Frence and Bell (1990), that the person function as a whole, has and exhibits specific properties that can neither be derived from individual elements nor be considered merely as their sum (Kadar and Shaw, 2000). Such a viewpoint was directly in opposition to the predominated Stimulus-Response view in psychology which posited that human beings are simply the sum of their parts and that it was only the discrete events accounting for separated observable parts of individuals and its associated external stimulus which mattered (Deutsch, 1968). Gestalt psychologists maintain that the individual as a whole is different from the sum of their parts. They posit that the individual parts are interdependent and interact in a dynamic fashion. In addition, this school of thought underplays the role of external stimulus by arguing that it is how an individual perceives the environments/stimulus that matters more rather than the stimulus per se (Köhler, 1967; Martin, 2003). For gestalt psychologists, changes in behaviour are a learning process that involves altering an individual's perception, expectations or thought patterns.

2.5.3 The Field Theory

Lewin's field theory was greatly inspired by the holistic nature of Gestalt psychology. It believes that behaviour is derived from the totality of coexisting and interdependent forces that impinge on an individual or group and make up the life space in which the behaviour takes place (Lewin, 1942). Generally, six fundamental principles are known to exist in field theory.

- i) Constructive Method. The field theories use a framework of "constructs", which

expresses the dynamic properties defined as types of reactions, as opposed to similarities to define members belonging to a life space. The constructs represent certain types, for example, causation, of interdependence. By adopting a constructive method, it allows the relationship between the life space and its compromised elements, such as psychological position or force, to be clearly notified.

ii) Dynamic Approach. The field theory shares the view of dynamic equilibrium (Deutsch, 1968) and admits equilibrium in social life as a dynamic process where changes occur, but a recognizable form is maintained (Lewin, 1947b). In addition, change from equilibrium, subsequently quoted as quasi-stationary equilibrium (Lewin, 1947a) is accompanied by changes in the psychological forces in the life space. In reverse, relevant changes in life space are also known to yield a potential in understanding, thereby predicting or altering changes in behaviour.

iii) Psychological Approach. The field theory does not merely accommodate the observable forces but also examines how individuals perceive these forces into account. Hence, how an individual behaves is not just contingent on the forces that encounter them, but also on their subjective perception of these forces.

iv) Analysis beginning with the situation as a whole. The holistic nature of field theory suggests that all psychological events are conceived to be a function of the life space (Deutsch 1968, p.417). Hence, rather than taking a view on particular elements or events, it considers the situation as a whole. Thereafter the importance of individual elements and their interdependence in the life space can possibly be judged.

v) Contemporary. Another fundamental characteristic of the field theory that makes it distinct from other approaches is its view on "Historical questions". Unlike the Aristotelian, Lewin (1936) argues that behaviour is not caused by something in the past or the future, but is grounded in the totality of the present situation. Put succinctly, only the present situation can influence present events. Thus, it focuses on the psychological forces on the behaviour of an individual in the "here and now" (Deutsch, 1968).

vi) Topological Approach. Lewin also refers to field theory as topological psychology,

which provides a valuable method of creating a visual representation of the forces that impinge on an individual or group as well as the interconnections between them. Basically, conventional topology concerns only the vector of locomotion, where co-existing factors in a life space are interrelated and how they change when the forces around them are increased or decreased (Mendelson, 1990).

Based on these principles, Lewin (1947b) expressed the field theory as

$$B = f(p, e)$$

Where it implies that behaviour (B) is functioned by the interaction between an individual (p) and environments (e), or its life space (s). In particular, Rummel (1975) provided insights on such a function:

“First, it is an emphasis on a person’s subjective perspective. Second, it incorporates the whole that is subjectively relevant to a person and to organize behaviour, goals, needs, desires, intentions, tensions, forces, and cognitive process into one system. Third, the elements composing this whole are interdependent and stand in dynamic mutual relationship. Fourth, the key to the dynamic nature of this subjective whole is the idea of tension (energy) systems created by needs and discharged by achieving associated goals. Fifth, the dynamic psychological construct is that of inner-personal force, which results from the intensity of personal needs and the valence of associated goals. Sixth, blocked goals can lead to increase in tension and a variety of behavioural and psychological consequences. And finally, inter-personal conflict is the result of opposing psychological forces.”(Rummel, 1975, pp.43-44).

2.5.4 Methodology: A Topological Approach to IB Concept

One major criticism made against the declining popularity of field theory is Lewin’s pursuits on his mathematical rigour, which led to a loss of usability for practitioners (Bartunek, 2007; Polzer et al, 2009; Schultz, 2010). In all fairness, having been couched by complex

mathematics, the majority of Lewin's work in field theory is indeed difficult to apply for those who should have been involved in the change process either to participate in or learn from it. None of the studies is found easy to read and the application of field theory approach is usually viewed as time-consuming and involves too many people to implement a change in behaviour.

However, despite such criticism, Lewin's yardstick for rigour still provides a valuable approach in constructing an IB concept. This is because, on the one hand, constructing an IB concept does not require any concerns in behaviour changing, but only borrows topological principles to construct fragmentary findings. In doing so, it avoids the "hodology", which considers the strength aspect of psychological forces, by adhering to the conventional topology which merely focuses on the vectors (Lewin, 1938). Based on this view, Lewin's rigour on the mathematical approach would not affect the study by complex mathematic issues; instead, its principles provide detailed guidelines on such a conceptualised work. On the other hand, IB research domain has a solid mathematical basis as well, in terms of the interdependence between traits and IB, for an IB topology. Previous IB concepts have generally indicated the interdependence among traits. These concepts are widely replicated and manifested across samples, thereby providing the ideal mathematic basis for IB topology.

The topology approach imparts unique advantages in constructing IB by allowing the synergy of psychological forces from various research perspectives. Rooted in the field theory, it enables the user to link, in a rather definite manner, a variety of facts that seemingly have very little in common. In this manner, fragments from different research domains, which can be in quite different terms, such as economic evaluation, buying urge, time inconsistency, can be possibly constructed.

2.5.5 The IB Constellation

Consistent to the field theory, whether or not a certain type of behaviour, for example, impulsive purchase, will occur hinges not only on one specific psychological force but also on the constellation (forces and structure of the life space) of the specific field as a whole. While the relevant forces can be learned from previous literature, the structures require

further attention.

Notably, consumers may experience various purchase forms in a single shopping trip. For example, they may make remind purchases when completing their shopping lists. Thus, once one's shopping life space may contain several sub-life spaces that respond to different shopping patterns. Some of these patterns may even share common parts of life spaces, e.g. reminder purchase vs. pure impulsive purchase, both involving coexisting forces like impulsiveness and buying urge. In order to provide a comprehensive view on IB, as described as one topological principle, the field theory will begin by considering the situation/constellation as a whole with the inclusion of all purchase forms of Stern (1962). Thereafter, the specified issues of each form will be justified. In consonance with Lewin (1939), three aspects of the topological constellation are concerned.

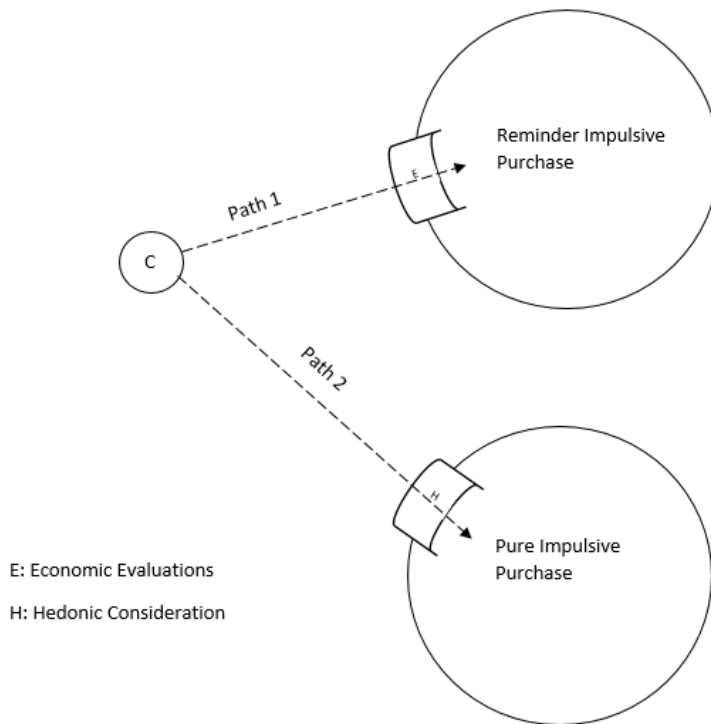
I Individual Stability

The first important aspect that pertains to the IB constellation is consumer's stability. It concerns the fact that consumers in "*statu nascendi*" describes the situation of a person moving from region A to region B and is cut loose from the region A, but is not yet firmly established in the region B. As indicated by Lewin (1939), a period of radical change is naturally a period of greater plasticity. This suggests that changing from a browsing consumer to an IB buyer might not be a sudden shift. Rather, as justified by the early section, it may occur in different stages. At each stage, the consumers are offered various types of psychological situations which allow them to enter new region/stages.

Based on this view, the regions/sub-sets represents each type of consumers that are not 'one' with a closed boundary but are accessible through certain psychological situations (Lewin, 1936, p.147) or with fuzzy boundary (Lewin, 1939). IB consumers can be differentiated on the basis of unique psychology situations they experience at a certain point in time. For example, considering the remind IB and pure IB consumer, although both categories of consumers may be browsing for the common life space they share (Lack of premeditation, variety seeking) before making a purchase, they will later be differentiated from each other through a unique pathway. Consumers (c) engaging into a psychological situation of cognitive evaluations (E) would go into the reminder IB regions (Path 1), and

consumers engaging into psychological premises of hedonic considerations (H) will enter pure impulse buying regions (Path 2). This is illustrated in the table below (Diagram 2.5.5).

Diagram 2.5.5 Illustration of Consumer Behaviour Paths

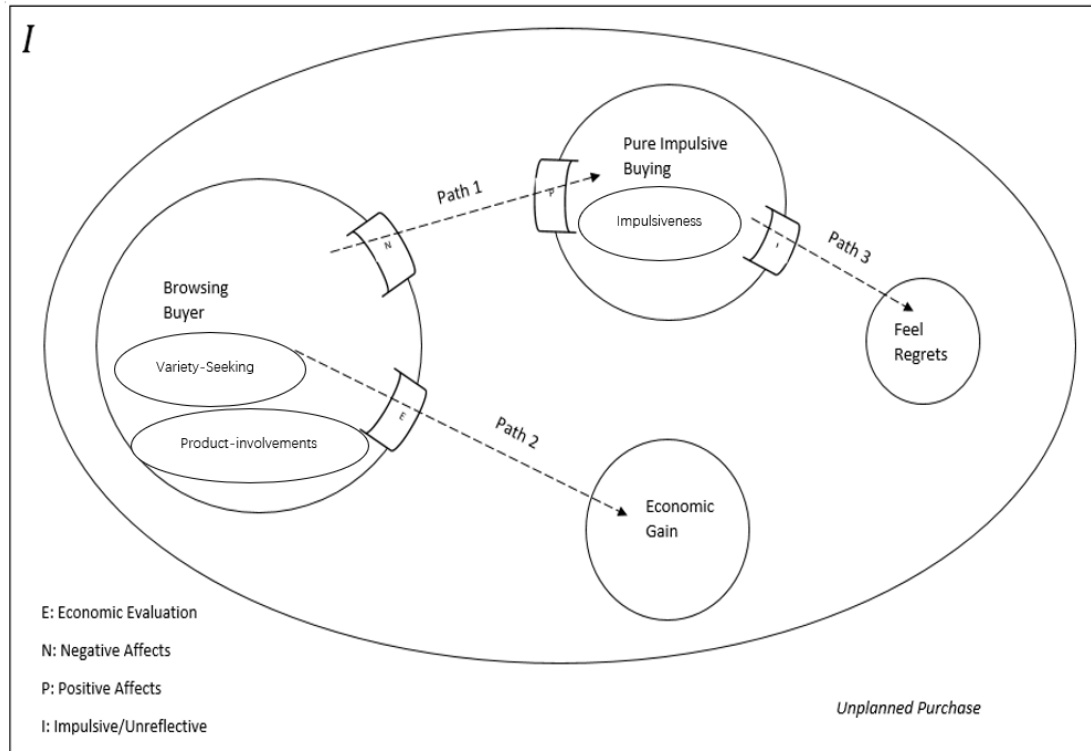


II Group-Belongingness

Making a purchase would subsequently cause changes in consumer's group-belongingness, namely the psychological forces in the constellation changes accordingly. Table 2.5.6 provides an illustration of the changes in consumer's group belongingness with reference to changes in psychological forces. In a simple case, before the purchase is made, consumers are surrounded by psychological forces such as looking for product varieties and features, thus posit themselves in a browsing consumer group. However, as one product comes to their attention and is subsequently inserted into their basket, they simultaneously make locomotion, which was quoted as "social locomotion by Lewin (1939)", from a region (Browsing groups) to another that responds to the distinct totality of specific characters. For instance, negative affects may trigger a pure impulse buying as consumers tend to manage their mood states through buying things. Once the locomotion is made,

consumer enters an absolutely new life space which comprises different psychological forces to the previous space, such as the impulsiveness vs. the variety seeking.

Diagram 2.5.6 Illustration of Changes in Group Belongingness of Consumer



Especially, in line with the constructive principle, it is important to note that group numbers who are constructive do not necessarily share a high degree of similarity such as demographic issues; however, they are viewed as the whole group for the interdependent relationship they share. By this means, a pure impulsive buyer, for an example, as a dynamic whole, is only definitive based on the interrelations such as the connection between negative and positive affections as a management strategy of mood states rather than the similarities among consumers such as their age or income levels. These inter-related facts serve as the psychological forces that make up the life-space.

Besides, changes in group belongingness not only alter the momentary surroundings of the consumers but also the total settings. According to Lewin, what has been a neighbouring region, easily accessible from the previous position, might now be farther away or no longer be accessible after the locomotion. Thus, it might permit possible activities that were previously forbidden or constrict activities that were previously

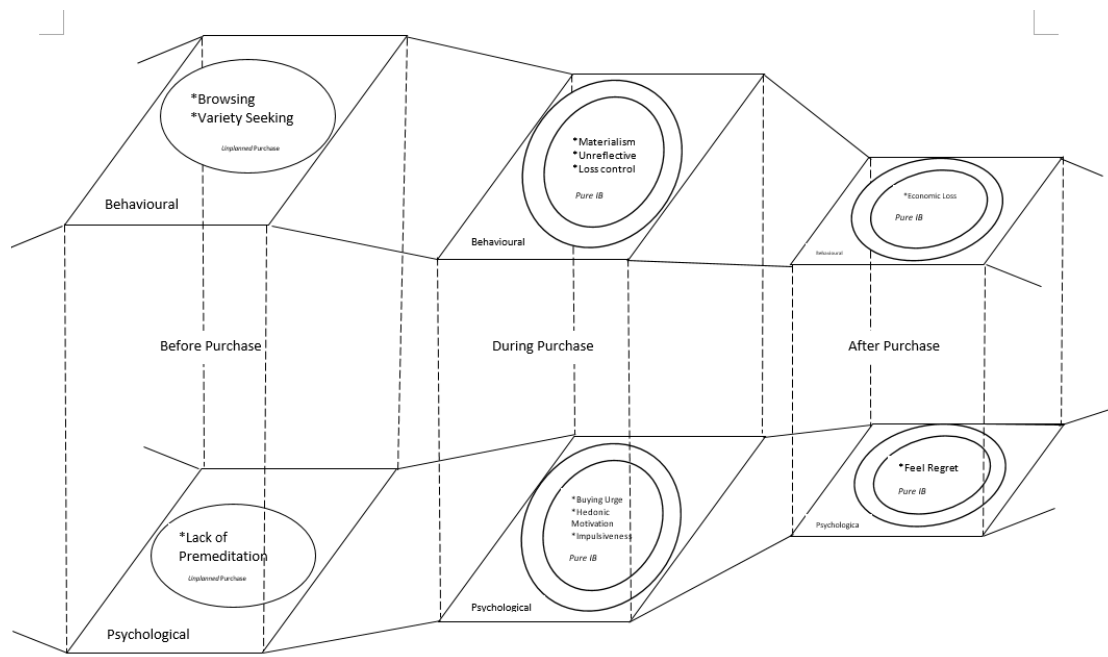
permitted. Such as shown in Table 2.5.6, when consumers try to hedge their negative feelings through path 1, they may not likely to go through path 2. Thus, their final outcomes tend to be regret feelings through path 3. For instance, consumers make purchases based on a hedonic thinking without any reflection on his/her economic capacities (I) may get into a new region that is much closer to feelings of regrets than before (path 2 to Pure IB set leads to the possibility of path 3); however, it may no longer be accessible to regions involving economic gains (no path links Pure IB set and Economic Gains).

III Time dimension

Moreover, the locomotion between regions concerns not only geographical surroundings and social surroundings but also the time dimension of the life-space. This aspect responds to the contemporary principle of topology psychology, that is, only the present situation can influence present events. The scope of time ahead influences present behaviour and hence, is regarded as a part of the present life-space. Recalling that a purchase is constituted by several stages, such as its antecedents, triggers, processing and outcomes, the topological would treat each stage separately. The stage before purchase, during purchase, after purchase would be used. Besides, one thing noteworthy is that, along with the extending in a timeline, the level of reality (External behaviours) and irreality (Internal psychological facets) about the consumer are also gradually being differentiated. That which means the psychological outcome of an individual becomes separated from what the consumer exactly achieves.

Diagram 2.5.7 presents both internal and external changes across IB stages, using pure impulse buying as an example.

Diagram 2.5.7 Internal and External Changes across Pure Impulse Buying Stages



At the first stage, before making a purchase, internal life-space of consumers may comprise, for example, lack of premeditation because IB buyers are generally lack of plan about their shopping trips. Accordingly, as the external expression of internal life-space, consumers may browse the products and look for preferred merchandises or service. Yet, once the pure IB is triggered in the second stage, during the purchase, internal forces will be changed as consumers become impulsive on decision-making. Thus, the psychological forces may comprise feeling urge to buy, seeking hedonic values or impulsiveness. According, consumers will behave differently from the previous stage, such as unreflective about the product features or fail to control themselves from the buying urge. As a consequent, at the final stage, the psychological outcomes of pure impulse buying tend to be regret feeling about the impulsive decision and the actual outcomes in external tend to be losses in economic wealth.

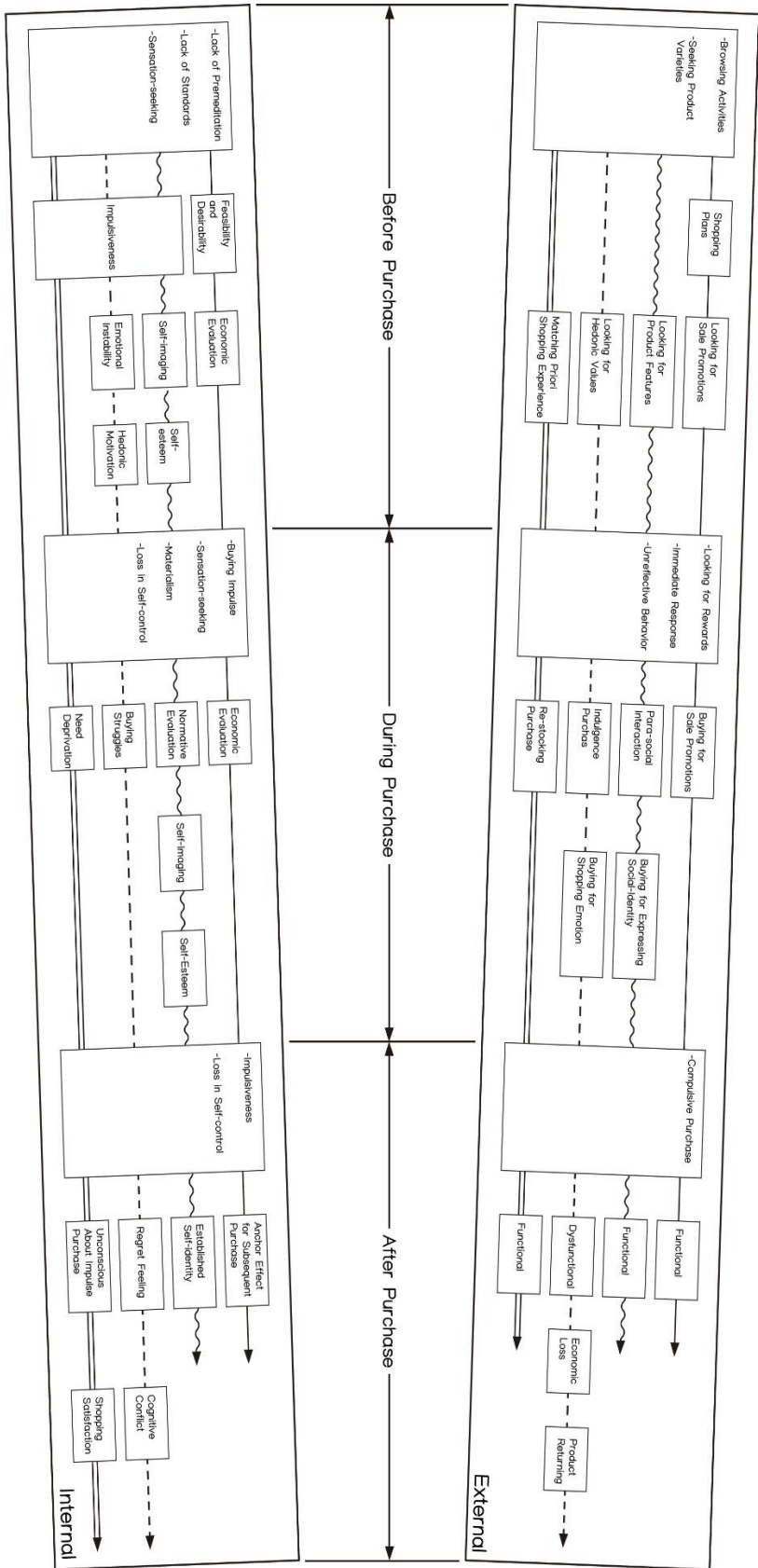
Especially, it is noteworthy that the internal and external life-space tend to converge as the purchase processing. This is because the components of life-space become more and more concrete during the purchase thus the connection between internal psychological forces and external behaviours becomes more and more clearly. For instance, before the purchase, lack of premeditation can function more than one form of IBs as most IB buyer

lacks shopping plans and it may not be straightforward to distinguish the pure IB from the other forms. Yet, once the pure IB is triggered, the life-space become more specific as more psychological forces are taken into concerns, for example, the impulsiveness, loss of self-control and its behavioural expression become clearer such as unreflective and impulsive. In this case, for example, it distinguishes pure IB from suggestion IB as suggestion IB may involve unique psychological forces such as normative evaluations and external expressions such as social interactions. Hence, the internal life-space and external life-space tend to converge alongside the time dimension.

2.6 An Impulse Buying Constellation

As a brief summary, while the psychological forces of impulse buying may engage at different behavioural stages and have different functions, the principles of field theory suggest each form of IB can be distinguished from its unique constellations at given nodes and the group dynamics that across the times nodes. Specifically, Figure 2.6.1 presents the paths and psychological forces of each form of IB.

Figure 2.6.1 Paths and Psychological Forces of Impulse Buying



- * Planned Impulse Buying : ———>
- * Suggestion Impulse Buying : ~~~~~>
- * Pure Impulse Buying : - - - ->
- * Reminder Impulse Buying : <====>

As it is indicated by figure 2.6.1, different impulse buying forms may experience unique paths both internally and externally while in the meantime they share some common parts of the constellations. Such difference and similarities provide a reference point for users of the constellation to identify the unique impulse buying forms and features at a given impulse buying stage.

Before Purchase

It can be noticed at this stage all types of unplanned consumers may share similar internal life spaces, including e.g. lack of premeditation and sensation seeking. In turn, these psychological forces result in certain behaviours or, in other words, correspond to certain external life space. For example, the lack of prior shopping plans encourages more browsing activities. High degree in sensation seeking indicates that unplanned consumers may look for product varieties.

However, some difference can also be found. For example, though reminder buyer and pure IB buyer may both conduct browsing behaviours, they have different psychological commitments and browsing targets. For reminder purchaser, they more care about the variety in utility aspects rather than its hedonic features (Liao and colleagues, 2009). In contrast, pure impulsive buyers are definite state-oriented consumers who seek varieties for emotional concerns, such as hedges a negative mood states (Weinberg and Wolfgang, 1982). Similarly, planned IB would adhere to the feasibility and desirability for their browsing and variety-seeking behaviour (Strack and colleagues, 2006). According to Hausman (2000), they are functional consumers who are motivated by sale promotions and discounts that reflect a commitment to their economic capacities. Although their work is governed by the trait of lack of premeditation and sensation seeking, they are generally labelled as utility purchase. Similarly, when planned IB and suggestion IB are concerned with functional values of making a purchase, the suggestion differs to planned IB, as well as reminder IB, by virtue of its emphasis on social values (Stern, 1962). Thus, it can be noticed suggestion IB consumers tend to engage with para-social interaction in a shopping trip, such as talking with sale staffs or ask advice from friends or families (Park and Lennon, 2006; Joo Park and colleagues, 2006; Xiang and colleagues, 2016).

In addition, some traits at this stage can also be in the form of “endophenotype” which implies that it engages in the internal life space but are not yet represented by the external life space. For example, IB consumers are generally in states of ego-depletion, implying that consumer’s self-regulatory resources are depleted prior to making a purchase. It is noteworthy that ego-depletion can be in two forms: proactive ego-depletion and passive ego-depletion. The latter one refers to consumers’ self-control resources that are depleted before entering the market communications whereas the latter is concerned with the situation wherein consumers’ self-control resource is depleted by exposing them to massive-level marketing communication. While both of them positively predict subsequent impulse buying, they have resulted in different ways (Cambell, 1987; Hock and Loewenstein, 1991).

During Purchase

This stage includes the triggers and its subsequent processing of an IB; thus a wide range of issues are seen to be engaged with the consumer’s internal and external life space. However, it can generally be noticed that the common life spaces shared by unplanned consumers are smaller than before. Instead, each of the IB forms becomes distinguishable as consumers would experience a unique psychological situation and behave accordingly at this stage. Thus, they construct unique internal and external life spaces.

Basically, IB buyers are found to experience loss of control and are materialists who cannot wait to materialise an item through making a purchase. They are reward-seeking rather than looking to avoid punishments, which indicates that they are better motivated by stimulus containing rewards rather than those who are motivated by punishments (Verplanken and Sato, 2011). In addition, IB consumers also have time inconsistencies. Immediate gratification is preferred to a delayed outcome in the long term.

With regard to the psychological forces that are included in the internal life space, four traits are commonly shared by IB consumers. The first one is buying impulse, which refers to the irresistible feeling of making a purchase. The second one is materialism, one key personality that is found to be a common feature for IB, which indicates that IB consumers tend to attach value to material objects and find meaning and identify in possessions. The

third one is loss in self-control, which is in the form of endophenotype and responds to the failure in regulating behaviours. The last one is sensation-seeking. It highlights the IB consumer's commitment to hedonic values, which, in turn, leads to reward-seeking behaviours.

Meanwhile, there are certain differences as well. For example, the buying urge can be triggered by different psychological situations, which links to a unique pathway to a certain IB form. In general, the buying urge for pure IB is triggered by hedonic values, such as shopping enjoyment. The urge for other three forms of IB may come from economic evaluation, such as making a purchase for a "buy one get one free" offer. In addition, IB consumers are impulsive and have relatively less reflection on the results, but they differ in terms of information processing. For pure impulsive buyers, a high level of impulsiveness indicates that the information, for example, external stimulus, is only engaged at the sensory level rather going into deep cognitive process and evaluations. In the meantime, impulsiveness also highlights the power of hedonic values so that, even pure impulsive buyers sometimes struggle to act in haste, although consumers will still make the purchase. Thus, once positive or hedonic stimulus is perceived, the irresistible urge would generally emerge to pure impulsive buyers and it seldom entails the involvement of a cognitive process. Rather, the other three forms of IB may use the cognitive process to confirm the utility value of their purchase, but they also differ in terms of the information they seek. For example, a reminder IB may be deeply involved in product features as they in a state of homeostatic dysregulation (Strack and colleagues, 2006), which occurs when consumers are embedded in states of need deprivation that reminds them of previous shopping experience. Thus, consumers may be particularly interested in products that have been previously favoured, for example, Coca-cola vs. Pepsi. Similarly, the cognitive process of a planned consumer's would focus on the content of sale promotions; thus, they can compare and find the best offers. Meanwhile their decision or IB buyers may be most altered by social norms in self-imaging (Dittmar and colleagues, 1996).

After Purchase

It is rather surprising that despite experiencing different psychological situations, the

external outcome of life space still shares some common force: compulsive buying. A wide of studies have indicated that impulsive buyers can subsequently be compulsive buyers. However, there could be different internal and psychological mechanisms among different IB forms. For instance, the reminder form of IB can subsequently engage into the compulsive buying due to the need deprivation while the pure impulsive buyers are engaged simply because they are highly impulsive and in ego-depletion.

In addition, pure impulsive buyer is more likely to suffer affective conflicts as, on the one hand, they achieve positive mood states through materialising hedonic products; on the other hand, they may suffer an economic loss due to their impulsiveness and lack of economic evaluations. Accordingly, Pure IB buyers may have cognitive conflicts as their achievements do not always match their prior expectations. As a result, it is noticed that some pure IB consumers are also consumers who most frequently refund their purchases (Verplanken and Sato, 2011).

For the other three forms of IB, their outcomes seem to be functional as consumers prior to engaged more or less in economic evaluations. Thus, they may not regret the economic loss but may do so for other reasons, such as cognitive conflicts between real and expected outcomes. In addition, the psychological outcomes for each form IB buyer are also different. For planned IB buyers, contemporary purchase experience would serve as an anchoring point for the purpose of comparison in a subsequent shopping trip. If a better offer is notified, then a new anchor will be set up. Otherwise, a compulsive purchase can be expected. Meanwhile, the reminder IB consumer may be unconscious/unreflective about their purchase outcomes as they make the purchase for granted given that it deals with familiar life spaces and as a result, may have a similar outcome, as expected. Finally, suggestion IB is believed to be an important form of fashion-oriented purchase. Therefore, by making suggestions for IB, consumers establish their social identities (Dittmar and colleagues, 1995).

2.7 Summary

Instead of defining IB by vocabularies or sentences, this Chapter provides a unique representation of IB concepts in the form of a topological constellation. It is suggested the IB constellation can be used as a new developed IB concepts for future studies in this fields. Its advantages are apparent. Firstly, rooted in the field theory, it employs the interdependence among IB properties rather than their similarities. Thus, it allows a synergistic work that concerns psychological forces from various research domains therefore, links IB properties that were previously thought to be fragmentary but are actually interlinked. In this case, properties defined by different theory tools, such as impulsiveness, BAS, Functional or Reflective Impulsive System, are successfully constructed in the new concept. From this view, the new IB concept provides a more comprehensive account than other previous concepts. Secondly, such a definition is also straighter forward for its users and would not bother them with diversified understandings. While IB components and their implications to IB are complex and complicated, the IB constellation provides more convenient and clearer representations of these components than the others that based on sentences and vocabularies. In addition, the constellation not only describes the unique life space for each IB forms at certain time/stages, but also the differentiates between both internal and external outcomes. Users of this concept can easily locate themselves with a relevant life space of IB and are subsequently aware of the psychological or behaviour forces they will cope with at a certain point in time. For example, one considers the decision-making process can reference to the psychological situations at the second stages of the topological IB concepts. Hence, the IB constellation may yield a great potential as a newly developed but comprehensive concept for future studies.

Surely, the IB is not impervious to certain limitations. According to the IB constellation, the principle of individual stability suggests that life space/coexisting forces could be shared at a certain stage by different IB consumers. In order to make a distinction between each form of IB, this study did underplay such a commonality but highlighted the most salient psychological force/position in each space. However, this is not always the case in real life.

For example, pure impulsive can be totally functional when there is perfect alignment between real outcomes and expected outcomes. Planned IB could also be accompanied with product return if one's economic capacity is overestimated, which tends to be pervasive in real life. These facts suggest that current topological constellation, despite being operational to multi-context, is still, to some degree, incomprehensive. It only differs in IB forms based on the main psychological forces but omits their difference in peripheral features. Thus, from this view, this IB concept is still open for further supplementary work.

Chapter 3 Meta-analysis

3.1 Introduction

When the previous chapter attempted to justify conceptual fragments along with their concomitant potential linkages in Impulse Buying (IB) research, it provided limited knowledge about association between IB and its components, including its antecedence, triggers or specific shopping contexts. As a matter of fact, a sizable part of IB study had been devoted to these components. It is also notable that components have elicited an increasing amount of attention in the recent past (Xiao and Nicholson, 2013). However, they are reflecting diversified understandings on IB components: studies vary from theoretical backgrounds to research targets and methods, thereby reaching different conclusions (Amos, et al. 2014). Although a need to integrate this diversified knowledge and mature it into a comprehensive view has been strongly emphasized, the fact remains that only limited review and synergy works have been done in this domain.

Integration of IB studies could be a very onerous task as it needs to confront the complexity in this field of research. Especially, whilst the personality model has been the central concern for IB research, the model by itself is complex, which is an umbrella item that is armed by multitudinous concepts, thus leading to multi-aspects views in IB traits. As McCrae and Costa (1996) remarked, "...*Existing personality theories as a body do not give a coherent view of the field ... students do not know whether they should be concerned about dreams, conditioned responses, or personality constructs, or motives, or identities*" (p.55). Meanwhile, a lack of consensus on personality models has continued to blight IB research. More specifically, IB studies have been pervasively viewed by various personality models; as a consequence, fragmentary conclusions were drawn, such as the debate between the role of impulsivity and self-control (Rook, 1987; Baumeister, 2002). However, while much effort has been put into the research domains in order to predict IB behaviours, only a few have adopted an integrated approach of previous studies. While a wide range of traits is found relevant to impulse behaviours, it is still unclear about the consensus of these effects across different samples. This has left a gap in the comprehensive review to justify these diversified understandings. To that end, this chapter aims to fill this gap in

extant research by offering an integrative perspective on contemporary IB knowledge.

3.2 Present Study

In wake of the aforementioned challenges, this chapter begins its integrative efforts by showing respect to the previous review works conducted in relation to IB. While only a few previous works have been found, they do offer extraordinary insights. The first integrative paper in this regard was written by Kalla and Arora (2011). Their study reviewed a wide range of IB studies that were published during 1959-2009 and sourced from academic papers, books as well as other electronic resources. With a particular interest in motivators of IB, the study suggested that IB is triggered by both internal and external factors. For example, internal motivators may comprise of self-discrepancy, hedonic needs or social status, while external motivators might include visual stimulus, shopping format, discounts. Muruganantham and Bhakat (2013) later extended this work with inclusion of two additional categories: 1) social-cultural factors comprising of demographic and cultural factors, and 2) product-related factors comprising of product features related to IB. Yet, when both their works did offer a relevant comprehensive account of IB triggers, they failed to concern IB as a whole behavioural circle, which may also include its unique antecedence, triggers, act as well as post-purchase outcomes. Centred from such concern and in order to provide a holistic view of IB, Xiao and Nicholson (2013) defined IB as both a process and outcomes, thus constructing a multi-aspect view of IB based on a cognitive behavioural account. Accordingly, a large body of IB knowledge, captured from 183 papers selected from an initial sample of 2453 studies that were published between 1940 and 2011, has been consolidated. In turn, four meta-constructs that make up IB have been identified and specified: antecedence, triggers, process and post-purchase states. In this context, the current study reflects the first meta-view of IB that offers a comprehensive account of various factors and theoretical concepts to have been applied in IB studies. Yet, the meta-works at this stage stopped at qualitative analysis and did not emphasise the fact that IB constructs may entail different magnitudes in its relevance to IB. Thus, there is still some ambiguity on identifying factors that tend to be relatively more effective than others. To fill

this gap, Amos and colleagues (2014) conducted a quantitative meta-review in terms of effect sizes. A selected sample of 63 articles was in the analysis, which produced a total of seventeen effective size estimations. However, this study also was unable to capture a holistic account of IB as its focus was restricted to IB triggers with a particular interest in situational factors, such as external cues, situational motivations or product characteristics. In particular, Amos and colleagues coded IB into a single dimension, psychographics; thus, the study failed to reflect the complexity in personality, for example, the hierarchy architecture and variety in personality models.

Thus, Given IB traits are widely believed as centre to most IB components (Rook, 1987), to provide a deep insight on IB traits, the review will extend previous integrative works with a focus on IB traits.

3.2.1 Trait Models

Whilst a holistic view of personality has increasingly and pervasively accepted by psychologists, the trait models of personality have received pervasive interests. It suggests that traits characterise personalities which are then displayed across situations in the form of coherent behavioural patterns (Block and Block, 1980). It allows the study to reduce multiple behaviours to a smaller number of basic dimensions through factor analysis of psychometric-based questionnaires. As compared to the predominated theoretical works, such as the psychoanalysis or learning/conditioning theory, traits models advanced more reliable tool based on statistical measurements. It was also observed that data could be collected in an easier manner via questionnaires than by the experimental approach. Most importantly, the factor models help construct a trait view of personalities that shifts the research away from investigating sources of personality, but view personality as a source of behaviour, which, in turn, enhances the traits' predictability to behaviours (Passer et al., 2008).

However, although factor analysis provides a convenient and reliable approach to understand human personality, it has invited divergent views on traits even as the outputs of factors analysis turned out to be varied among the samples (Just, 2011). While some results did suggest that personality traits are indifferent across situations, others felt

otherwise. Consequently, the debate resulted in a dual focus on traits researches. This debate persists even to this day.

3.2.2 The Implicit Theory of Traits

The initial trait theories grew out from the intelligence tests that were used to predict school success and later expanded to predict the ability of general performance. It concerns the general and enduring internalized characteristics of the individual, in terms of statistical square mean, that functioned as antecedence for behaviour tendencies across a broad range of diverse situations (Endler and Rosenstein, 1997). It was believed that individual behaviours depend on the implicit conception from themselves. For example, a couple of studies suggested how children perceive the nature of intelligence would alter their preference for behavioural motivations. Children who believe that intelligence is increasable tend to be motivated by learning-oriented goals to enhance their competence, while others who believe that intelligence is a fixed entity are more likely to follow a performance-oriented goal so as to secure positive judgements or prevent negative judgements (Goodnow, 1980; Yussen and Kane, 1985). In this regard, individual differences in beliefs and values generate an individual difference in behaviour (Dweck and Leggett, 1988). Hence, behavioural are sourced from internal factors of individuals, such as perceptions relating to intelligence. Personality traits, from a general account of individual implicit theories, were supposed to be insulated from specific environmental stimuli. This view serves as the fundamental argument for implicit trait theorist.

3.2.3 The Interactional Traits Model

Although it is suggested that trait-behaviour connection is independent from the environment, the implicit view posits a static dimension assumption on traits which implies a "*one fits all*" traits measurement. Instead, subsequent studies noticed traits measurements, such as the ones on emotional intelligence, could be very sensitive to environmental factors. An increasing number of studies doubt that the behavioural variance explained by the traits may not only depend on the person participating in the survey but is also attributable to situational variables (Hunt, 1965). In this context, Murray (1938) said:

" since at every moment, an organism is within an environment which largely determines its behaviour, and since the environment changes, sometimes with radical abruptness—the conduct of an individual cannot be formulate without a characterization of each confronting situation, physical and social. (p.39)".

Hence, the implicit theory of traits attracted many criticisms, which suggests that it is inept in explaining the behavioural variance among individuals. Studies conducted by Colley (1902) and Mead (1934) found that the trait scales often gains low loading in terms of coefficient and reliability (0.2 to 0.5) and is only responsible for a minority of the behavioural variance (4% to 25%). In addition, these loadings could fluctuate heavily across environments. For example, in an early study conducted on the anxiousness traits by Endler and colleagues (1962), the variance accounted by situations to behavioural was found to be 3.8 times more than what was accounted by a person in a sample of Illinois sophomores, whereas it accounted 11 times in a sample of Penn State. Contemporaneous marketing studies, such as the ones conducted by Wells (1975), is also indicative of low correlations between personality traits and aspects of consumer behaviours, thereby hinting at the limitations of implicit trait models in marketing researches.

Thereafter, attention shifted back to situational factors; however, this also seems to be insubstantial to behavioural variance. As revealed by a further investigation by Endler and colleagues (1962), when there was an increase in the variability of situations, it only increased a small amount in relation to the total variance of behaviour (less than 5%). The level of situational complexity was not found to affect behavioural intentions. Yet, once they interacted with the situation by subjects, it appeared that the interaction accounted for one-third of the total variance, which is much bigger than the total of variance from person and situation. In this view, it is suggested that neither the person nor the situation per se that created these variations. Rather, it is the interaction between the two that matters most. Subsequent studies from Endler and his PhD students also made similar observations that further support such a viewpoint (Plomin et al., 1994).

These findings are essentially in agreement with an interactive model of traits, wherein the internal factors and persons interact with the external factors and stimulus. As described

by Lewin's field theory, personality and situation variables in behaviour studies do not seem to be independent entities that could be considered separately; rather, they were mutually interdependent variables whose interactions merit an investigation (Lewin, 1935).

It is notable that almost all trait theorists nowadays recognize at least two levels in trait hierarchy, corresponding to the first- and second-order factors (Cattell et al., 1970; Costa and McCrae, 1995; McCrae, 2015). For example, the Big Five Personalities may account for first-order traits that only reside on gene-related issues and are impervious to situational influences (Neale and Cardon, 1994; Pavlov et al., 2012). More recently, Mowen (2000) suggested a four-level trait hierarchy, comprising of elemental traits, compound traits, situational traits as well as surface traits. It is suggested that traits reside in a structure in which more abstract, cross-situational traits influence narrower situation-specific behavioural tendencies, which, in turn, influence behaviour (Mowen et al., 2007). From this view, the trait-situation involvements may depend on the hierarchy where the trait resides. However, although studies have provided a wealth of trait models based on factor analysis, most of them are merely interested in the highest level traits than an integrative and comprehensive view of the hierarchy (Eysenck and Zuckerman, 1978; Zuckerman et al., 1993; Eysenck, 1991; Cost and McCrae, 1995). As a result, it remains unclear as to whether different kinds of personalities and external cues are engaged in a particular behaviour.

3.2.4 Factor models of Traits

Exploratory factor analysis is a lexical analysis of adjectives related to perceptions on behaviours, such as "impulsive", "abuse" or "aggressive". Researches use manuals of many personality inventories containing tables that list relevant trait terms in order to characterize each scale. The earliest exploratory factor analysis in traits research was noticed almost a century ago in the seminal work of Spearman (1904) relating to general intelligence. Subsequently, the method was expanded into the field of personality structures research. While extraordinary insights were provided, there was also great divergence on the exact paradigm of personalities (Eysenck and Zuckerman, 1978; Zuckerman et al., 1993; Eysenck, 1991; Cost and McCrae, 1995). While some

researchers proposed a 16-factor model of personality (Cattell, 1957), others believed that there would be three or five at the most (Digman, 1990; Eysenck, 1991). Factors, as argued by Eysenck (1991), other than his Big Three, are either components of E (Extraversion-Introversion), N (neuroticism) and P (Psychoticism), or a combination of the two. Meanwhile, a general factor model of personality has also attracted widespread academic interest in recent years (Musek, 2007).

3.2.5 Eysenck' Three Dimension Model of Personality Traits

One of the most dominating models in personality structure is Eysenck's three-dimension model. The model provides three major types of factors at the highest order ends of personality structure: E (Extraversion-Introversion), N (neuroticism) and P (Psychoticism). Each of them showed strong replicability across samples, which is indicative of its concurrence to the stable and permanent principle of personality structure (Eysenck and Eysenck, 1969). However, even as the three-dimension models serve as the basis for personality hierarchy, Eysenck made litter systematic efforts to develop validated measures of these more specific traits.

3.2.6 The Big Five Model

Apart to Eysenck's Three Dimension Model, another widely accepts view in personality structure is the Big Five Model of personality (BFM). Yet, there are two types of five factor model; one represents the studies based on lexical hypothesis and operationalized in the sets of factor markers (Goldberg, 1990, Zuckerman et al., 1993). Meanwhile, the other stands for the McCrae and Costa (1985) operationalized under the NEO Personality Inventory.

Both types of the model are extensively used today and have been reviewed as equally in utility. In general, five factors are included in the models: Factor I, Surgency (or Extraversion); Factor II, Agreeableness; Factor III, Conscientiousness; Factor IV, Emotional Stability (vs. Neuroticism); and Factor V, Intellect (Digman and TakemotoChock, 1981) or Openness to Experience (McCrae and Costa, 1987). Factor I contrasts traits such as talkativeness, assertiveness, and activity level with traits such as silence, passivity, and reserve; Factor II contrasts traits such as kindness, trust, and warmth with such traits as

hostility, selfishness, and distrust; Factor III contrasts such traits such as organization, thoroughness, and reliability with traits such as carelessness, negligence, and unreliability; Factor IV includes traits like nervousness, moodiness, and temperamentality; and Factor V contrasts such traits as imagination, curiosity, and creativity with traits such as shallowness and imperceptiveness.

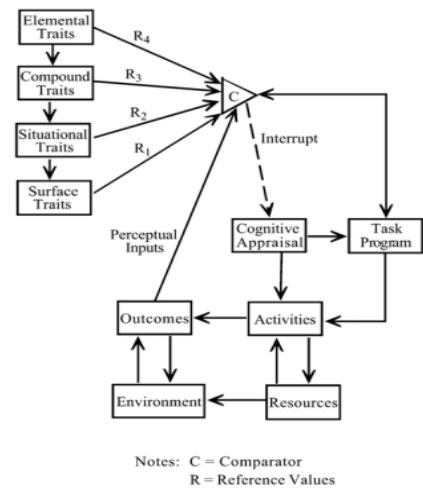
Although there are some disagreements on the components/labels of these models, the Big Five model still describes behaviour at a higher and more abstract level based on empirical supports (Ryan and Xenos, 2011; Wilt and Revelle, 2015). As suggested by Goldberg (1993), these two models entail many similarities. At first, both of them suggested that a five factor paradigm is necessary to account for the phenotypic personality differences (Goldberg, 1983.) Therefore, they rejected a 16-factor or 3-Factor. For example, it denied the 16-factor model from Cattell (1957) as the majority of Sixteen-factors (11 indeed) are not replicable across gender and age (Eysenck and Eysenck 1969). And in the meantime, three factors were believed to be too few to reflect the general picture of personality. It was found that the E factor under Eysenck's Three Dimension model seems to be a mixture of factor E and C, which denotes the Conscientiousness under the Big Five (Zuckerman et al., 1993). At the second place, the fourth components of both types of model are essentially the same, despite being coded in the opposite direction (Neuroticism versus Emotional Stability). At last, the third item, C (conscientiousness) also shares a great similarity between these two models. Finally, there is a certain amount of difference between these two. For example, the fifth dimension, under the NEO-PI (McCrae and Costa, 1987) is conceived as Openness to Experience when considered as Imagination in the lexical model (Digman and TakemotoChock, 1981). However, it is notable that subsequent studies have adopted McCrae and Costa (1987) interpretation (Openness to Environments).

The BFM model plays an important role in IB research. On the one hand, it provides the most elemental traits that alter a wide range of lower-level IB traits to consumers' IB tendencies (Mowen, et al 2007; Sun and Wu, 2011). On the other hand, it explains the genetic variance of impulsive buyers and the inheritability of IB traits (Bratko et al., 2013).

3.2.7 Integrative View of Traits

While the majority of previous arts inquired on the highest level traits, such as Eysenck's Three Dimension, McCrae and Costa's Big Five personality, or more recently the General Factor Model (Goldberg, 1993), their findings of factor analysis also suggested that personality traits are hierarchically arranged, with specific but narrow traits being situated at lower levels in the hierarchy and global and broad trait dimensions at the top. In recent years, an increasing number of efforts have been made on a holistic

Table 3.2.7 3M model adapted from Mowen (2000)



view of the hierarchy and aim to reveal an integrative, comprehensive picture of personality traits.

Among these integrative models, one of the most widely used models is the Metatheoretic Model of Motivation and Personality, also referred to as the 3M model (See Table 2.5.6, Mowen, 2000). The first M at first applies a control theory that describes how traits motivate behaviours. Secondly, it accepts trait theories that valid and reliable scales can indeed be developed to measure intrapsychic dispositions to behave. Thirdly, it posits a hierarchy model of personality that traits reside in a hierarchy in which more abstract, cross-situational traits influence narrower situation-specific behavioural tendencies, which, in turn, influence behaviour. Finally, it borrows the idea from evolutionary psychology that the needs for arousal, material resource and body resource represent highly basic elemental traits.

Basically, the model is derived from the feedback model proposed by Carver and Scheier (1990), according to which a generalised concept would result in a set of behavioural principles which, in turn, would lead to programs of behaviour and planned sets of activities. Mowen believes the individual's self-concept could be formed by relevant personality traits (Carver and Scheier, 1990). Therefore, rather than the generalised concept in the model, 4-level hierarchy traits were specified and integrated into the model based on the categorising work from Allport (1961).

The highest order traits are elemental traits that comprise of the Big Five and three components borrowed from evolutionary psychologies. These elemental traits are supposed to develop from genetic as well as early life learning the history of the individual. Thus, it is constituted by the traits situated at the highest level of trait hierarchies. In this regard, Mowen (2000) suggested two sub-components of the elemental traits: 1) the Big Five version from Saucier (1994), which included openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability; and 2) items such as the needs for material resource and the needs for body resource that represent highly basic elemental traits from evolutionary views. Such idea is inspired by the works from Gazzaniga and Festinger (2006), which suggests that early humans tried to gain competitive advantage by manipulating the environments using their hand (body resource) and tools (materials). Thus, the need for material and body resource is fundamental to personality because they may reflect the most basic needs for evolutions. The second level of traits which is in close proximity to the elemental traits is compound traits. By definition, the compound traits are partly attributed to the effect of multiple elemental traits as well as the effects of culture and subculture. The model posits that compound traits have greater predictive power than elemental traits and are conceptualised as cross-situational in nature. The third level traits are situational traits, which represent enduring dispositions to behaviour within a general situational context. In this model, situational traits are influenced by both the pressures from situational environments and the elemental/compound traits. To that end, situational traits are situational constrained, such as shopping pleasure in the beauty store. Finally, surface traits reside at the fourth level of the hierarchy, which are highly specific dispositions resulting from the effects of elemental, compound and situational traits, as well as from the press of the situational environments. Surface traits tend to occur in narrower contexts than the general situational traits, which is why they directly link to specific behaviour intentions or behaviours, for example, the irresistible urge to buy a beauty product. Thus, the model summarises a combination of traits from different levels of the hierarchy that would directly or indirectly influence the behaviours. The surface traits are expected to be the strongest predictor when the situational trait is weaker and the

elemental traits are the weakest.

The 3M model offers a comprehensive account of traits by including four levels of traits, which, in turn, decide about the occurrence of an impulsive purchase. The elemental traits, for example, may stand for some genetic studies in IB, like to explain the inheritable nature of IB (Bratko et al., 2013). Meanwhile, situational traits may provide theoretical explanations on interactions on situational factors as well as relevant IB traits (Xu, 2007; Parboteeach and Valacich, 2009). In this regard, the model also provides a complementary solution to connect fragmented views of traits: when situational traits may stand for interactive traits models, their impacts may be altered by higher level traits, such as the compound and elemental traits that are relatively stable across environments and subjective to genetic factors, which, in turn, recalls the implicit view on traits. Therefore, the 3M model could be used as a potential tool for synergising fragmentary researches in the IB domain.

3.3 The Shopping Environment of IB

Alongside Lewin's insights on human behaviour, impulsive purchases can be viewed as a result of interactions among consumers and contemporary environments that they are embedded in. In this regard, both the environment and the person play an important role in the pursuit of an IB. When the majority of IB researches concedes that the majority of behavioural variance resides in the person making a behavioural intention or action, there are others who contend that the major determinants of behaviour and sources of variance resides are the context or behavioural situations (Hunt, 1965). In turn, the debate between the two led to two different clusters of studies in IB inquiries: one focused on the shopping environment of IB whereas the other concentrated on the traits of impulsive buyers.

Meanwhile this thesis favours a review on IB traits for two reasons. Firstly, it is believed that the person who makes the decision experiences the process and withstands the outcomes of purchase, besides imparting meaning to an IB, in terms of both a process and outcome. This is consistent with a holistic view on IB concepts. In contrast, shopping

environments are situational factors that merely engage as IB triggers, which are subject to an individual's internal processing (Coley and Burgess, 2003). It is only a part of IB that cannot be insulated from the holistic IB. Secondly, whereas Amos and colleagues (2015) have recently provided a detailed meta-analysis of dispositional factors, there continues to be a lack of a comprehensive view on IB traits, thereby leaving a large number of diversified knowledge untouched. Based on the above reasons, this chapter would mainly focus on a review of IB traits thus with brief concerns on IB environments.

In general, there are two phases in IB environment researches. The early phase investigations are driven by managerial thinking that aims to predict sale fluctuations with its relevance to shopping environments; in addition, an S-R paradigm was commonly applied. The second phase of IB environmental investigations is more concerned with the internal process such as how consumers process shopping stimuli. In this way, the S-O-R paradigm is applied to emphasise the consumers' role as an organism of external stimuli. The following sections will summarise both paradigms in detail.

3.3.1 S-R Paradigms in IB

As stated by Bitner (1990), if consumers are influenced by physical stimuli experienced at the point of purchase, the practice of creating influential shopping environments should be an important strategy for most exchange environments. Accordingly, a couple of marketing studies inquiring about impulsive purchase has attempted to find the situational cues that directly connect an IB purchase, insisting that certain type of products or stores would be visited in an impulsive manner more frequently than the others (Stern, 1962; Kollat and Willett, 1967). By this means, IB is often interchangeably quoted as unplanned purchase upon product categories and to distinguish itself from purchases with a shopping list. A wide range of IB researches and market surveys have dedicated themselves in defining IB with relevant product essentials, such as DuPont (1948-1965), Patterson (1963), Cox (1964) and Curhan (1972). It was believed that studies would provide insights into managerial practices through manipulation of unplanned sales by linking these essentials to impulsive purchase (Bellenger et al. 1978). Clover (1950) suggested that the loss in sales on fewer business days, such as during Christmas, strikingly point to the great

importance of impulse sales. A table breakdown by type of 154 stores in Lubbock, US, alerts managers about the thoughts that a shorter week (with shorter store hours) would reduce the sales by 10 to 17%. While it is possible that some of the lost sales might be recovered at later dates after the holiday break, their results, nevertheless, seem to indicate there is variation in the relative importance of unplanned sales among the various types of stores. While for some type of stores, planned buying was enough to pull sales such as department stores and beauty shops, most store types depend on impulsive sales in order to offset the loss due to short store hours. Hence, findings of this study seem to indicate the great importance of impulse buying as well as the advisability of a retailer following a policy of making it as easy as possible for consumers to make purchases (Kollat and Willett, 1969).

Table 3.3.1 provides a brief chronological summary of these types of works.

Table 3.3.1 "S-R" paradigms in Impulse buying		
Author	Publication	Environmental Stimuli
Clover (1950)	<i>"Relative Importance of Impulse Buying in Retail Stores"</i>	Shopping departments; Opening hours.
Patternson (1963)	<i>"In-store traffic flow"</i>	Shelf Location
Cox (1964)	<i>"The responsiveness of Food States to Shelf Spaces Changes in Supermarkets"</i>	Shelf Spaces
Kelly (1965)	<i>"An evaluation of selected variables of end display effectiveness"</i>	Display Locations
Curhan (1972)	<i>"The relationship between shelf space and unit sales in supermarkets"</i>	Shelf Spaces
Cobb and Hoyer (1986)	<i>"Planned versus impulse purchase behavior"</i>	Product package, Price and Brand
Iyer and colleagues (1987)	<i>"Deviations from a Shopping Plan: When and Why Do consumers Not Buy as Planned"</i>	Time pressure; Shop Layout.

However, such view of shopping environments is quite myopic when viewed from the lens of consumer psychology. It is found as failing to establish a connection with shopping environment with consumers, who actually experience and act upon purchase behaviour. Some products might be purchased frequently in an unplanned manner, but the purchases could underlie the underlying unique psychological process and therefore, could be fundamentally different. As Stern (1962) agreed, an unplanned purchase could be in different forms and would cause both theoretical and managerial confusion in case such differences are unable to be distinguished. Armed with such insights, the interests of IB studies made the transition from product to consumers and tried to distinguish impulsive purchases from unplanned purchases (Rook, 1987).

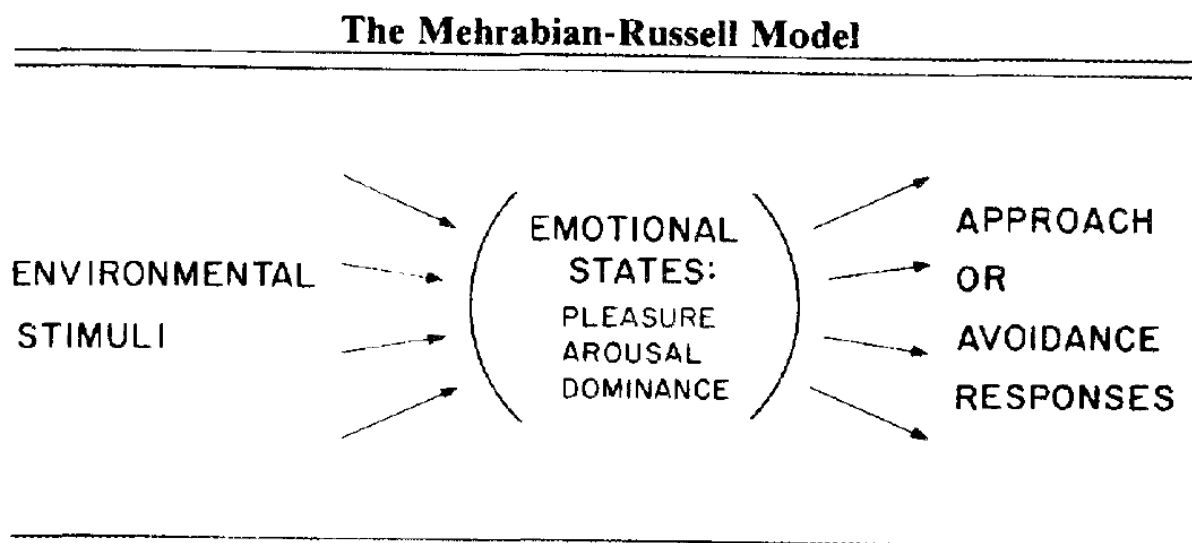
3.3.2 Environmental Psychology and the Mehrabian-Russell Model

Corresponding to the failure of the S-R paradigm in explaining buying behaviours, some environmental psychologists have reconsidered the connection between the environmental stimulus and buying behaviours by distinguishing between the physical surroundings and the shopping atmosphere for customers. As noted by Donovan and Bossiter (1982), "S-R" paradigms in shopping environments are constrained by certain methodological limits. To begin with, those studies had been confused by concepts of physical variables, such as the aisle width, brightness or crowding of the store, and the concepts of store atmosphere. According to Kotler (1973), atmosphere of a store refers to the intentional control and structuring of environmental cues. Physical variables are no more than antecedents of a store's atmosphere (Donovan and Bositer, 1982). Secondly, store atmosphere is indeed multidimensional; however, it was usually conceptualized as being vague and possessing a single attribute, such as a "good or bad" store atmosphere. Thirdly, while these studies have made mention of the influence of a single factor (in relation to store atmosphere) on consumer's decision making, they did not undertake any detailed investigation on how overall store atmosphere affects shopping behaviours. For instance, Belk (1975) and Lutz and Kakkar (1975) investigated usage environment, but their study did not cover the general retail shopping environment. Therefore, as concluded

by Donovan and Bossiter (1982), the actual effects of store atmosphere on shopping behaviour are yet to be well-documented.

To focus on these concerns, Donovan and Bossiter (1982) introduced the concept of environment psychology to marketing fields. Previously, environmental psychologists had considered the influence of the shopping environment on customer behaviours in a wide range of disciplines such as landscapers, architects and interior designs (Craig 1973; Stokols, 1978). They recognised that it may have equal resonance on marketing studies and appear to be valuable tools in dealing with the myriad in-store variables that engender a store atmosphere. Therefore, based on a Stimulus-Organism-Response paradigm, they introduced the Mehrabian-Russel model to the retailer context and attempted to offer a comprehensive framework in order to better understand environmental effects on consumer behaviours. Table 3.2.2 provides a brief summary of the Mehrabian-Russel model.

Table 3.3.2 The Mehrabian-Russell Model, adapted from Donovan and Bossiter (1982)



As shown in the model, an adequate S-O-R model is inclusive of three essential taxonomies: a stimulus taxonomy, a set of intervening variables and taxonomy of response. More specifically, the response taxonomy is postulated as an approach or avoidance behaviours and considered in four aspects:

1. A desire physically to remain in or to go away from the environment;

2. A desire or willingness to browse and to explore the environment rather a tendency to avoid moving through or communicating with the environment or to remain inanimate in the environment;
3. A desire or willingness to communicate with other in an environment as opposed to a tendency to avoid interacting with others or to ignore communication attempts from others.
4. The degree of enhancement or hindrance of performance and satisfaction with Task performance.

Donovan and Bossiter (1982) opined that these four aspects were appropriate for describing retailing behaviours. Physical approach or avoid avoidance might denote the patronage intentions. Exploratory approach or avoidance may be related to store browsing or exposed to a broad array of marketing communications. Communication approach or avoidance may also help elucidate the para-social interaction between consumer and store employees. Meanwhile the last aspect, performance and satisfaction approach and avoidance may be related to post-purchase results, such as repeat-shopping frequency and the reinforcement of time or money spent in the store.

3.3.3 Shopping Emotion as Organism

Besides, under the S-O-R paradigm, the intervening variables, "O" refers to the response for the internal processes as well as structures between external stimuli of the personnel and their final action. It consists of perceptual, physiological, feeling, and thinking activities (Bagozzi, 1986, p.46). The Mehrabian-Russell model implies that the effect of store atmosphere on consumer behaviour is mediated by the emotional states of the individual. Yet, it has not been clearly defined as to what kind of emotions a consumer is likely to experience (Weinberg and Gottwald, 1982; Rook & Gardner, 1993; Ning Shen and Khalifa, 2012). This is because emotion, in its core, is a multi-aspect construct that can be viewed from divergent perspectives and approaches. It can be measured in various forms, such as by means of self-reported scales (Plutchik, 1980) or by the behavioural response (Izard, 1977). These varieties in turn pose a strong challenge to the validation and generalization of emotional measurements (Havlena and Holbrook, 1986; Westbrook and Oliver, 1991;

Richins, 1997). Studies on IB emotions have also been impacted by such varieties in measurements, as evidenced in the PAD scale (Ning, Shen and Khalifa, 2012) vs. the GSR (Galvanic Skin Reaction, Weinberg and Gottwald, 1982). Therefore, inconsistent, and even contradictory conclusions have been made in this area of research. For example, while studies such as Aspinwall (1988) and Rook and Gardner (1993) have reported that positive emotion tends to increasing IB, the views of Thompson and Prendergast (2015) are different in this matter. Therefore, the following sub-sections provide a brief overview of some most commonly used measurements on shopping emotions.

Theory of Basic Emotion

One of the most widely accepted measurements on consumer emotion can be observed from the theory of basic emotions, wherein scholars have attempted to order emotions by identifying a set of biologically-based and universally experienced basic or fundamental emotions. The basic emotion theories drew on the views held from an evolutionary perspective and posited that emotion plays a critical role in enhancing an organism's (individual's) chance of survival. A detailed discussion is undertaken in the seminal work of researchers such as Izard (1977) and Plutchik (1980).

In general, Izard (1977) examined emotions through the identification of facial muscle responses that are associated with emotions in enhancing survival. Thus, a four-form Differential Emotion Scales (DES) has been developed with the inclusion of ten emotional factors: enjoyment, surprise, disgust, anger, interest, sadness, contempt, fear, guilt and shame. It has been frequently used as a measurement on consumer emotions whereas it has come under criticism for being predominated by negative emotions, thus losing its comprehensiveness (Laverie et al., 2013). Correspondingly, Plutchik (1980) identified eight emotions aspects that have adaptive significance in the struggle for survival: fear, sadness, joy, anger, disgust, surprise, acceptance and expectance. Meanwhile 62 forced-choice emotional descriptors were developed in order to scale these eight dimensions and published under the Emotional Profile Index (EPI, Plutchik and Kellerman, 1974).

Yet, the range of consumer emotions are inevitable broader than the ability of DES or the EPI. For example, how would a consumption emotion related to a romantic gift be reflected

by the scales? As later studies criticized, "*there is no coherent nontrivial notion of basic emotions as the elemental psychological primitives in terms which other emotions can explain*" (Ortony and Turner, 1990; p.315). In this regard, questions have been raised on the validity of DES and EPI scales that were founded on the notion of the Basic Emotion Theory.

The PAD

Donovan and Bossiter (1982) initially characterized intervening variables of the Mehrabian-Russell Model in accordance to three emotion dimensions that are known by an acronym PAD. The first dimension, P, refers to the emotional states of Pleasure-Displeasure. It signifies the extent to which a person feels happy or satisfied in the environment. The second dimension - A - stands for Arousal-Nonarousal and refers to the degree to which a person feels stimulated, excited, or active in the environment. Similarly, D stands for Dominance-Submissiveness, which refers to the individual feeling in control of, or acting under free will. The model posits pleasure and arousal interacts whereas the overall PAD dimensions are factorially orthogonal. For instance, in a neutral environment, which is neither pleasing nor displeasing, moderating arousal enhances approach behaviours, whereas very low or very high arousal leads to avoidance behaviours. In a pleasant environment - the greater the arousal, the greater the approach behaviour. In an unpleasant environment, the higher the arousal, the greater the avoidance behaviour.

There are also some modified views on the intervening variables with exclusion of the dominance dimension. For example, Russell and Pratt (1980) argue that dominance requires a cognitive interpretation by the individual and is therefore not purely applicable in situations calling for affective response. Thus the dimension might be eliminated from the model. However, as it can be widely noticed in modern marketing, dominance related issues, such as self-control and consumer's freewill, have significant implications on individual emotional states (Bohs et al., 2018). Self-control has been marked as a powerful predictor of consumer's mood states, such as stress, and the thereafter impulsive purchase (Sulatan et al., 2014). Therefore, this thesis retains Mehrabian and Russell's initial tridimensional classification.

Yet, it has also been critiqued that the PAD scales does not purport to measure emotions per se, but accesses the perceived pleasure, arousal and dominance elicited by a set of environmental stimuli. Therefore, as suggested by Richins (1997), the PAD scales is only best used when the scholar tries to measure the dimensions underlying emotion states without understanding the purpose of specific emotions experienced by the participants.

3.3.4 Stimulus Taxonomy

While the Mehrabian and Russell's model provides useful instructions to the taxonomy of response and intervening variables, it also leaves the problems of appropriate stimulus taxonomy largely untouched. This is mainly because there are so many stimuli involved in any environmental setting; it is difficult to distinguish which of those are relevant to the response in both emotion and behaviours from the others. Donovan and Bossiter (1982) attempted to the stimulus taxonomy by means of an information processing measure on the stimulus based on experimental settings, which aims to provide a framework to help determine which specific types of in-store stimulus configuration evoke which types of emotional responses. They believed that the information rate or "load", defined as its degree of novelty and complexity, would be a general measure of environmental stimulus applicable across various contexts. The novelty refers to the unexpected, the surprising, the new, and the unfamiliar perspective of environmental settings. The complexity denotes the number of element or feature and to the extent of motion or changes in an environment. In addition, considering the fact that information load various depends on the individual difference (Grossbart et al, 1975; Markin et al, 1976), Donovan and Bossiter further proofed measurement validation upon the emotional states it involves under the Mehrabian and Russell Model. It turns out that three of five proposed information measure had high loaded and significant reliability ($\text{Alph} > 0.78$), including novelty (average of usual-surprising, common-rare, familiar-novel), variety (average of homogenous-heterogeneous, redundant-varied) and irregularity (average of symmetrical-asymmetrical, patterned-

random).

Alternatively, Berman and Evans (1995)

describe the stimuli taxonomy by providing a detailed typology of environmental cues of purchase. As shown in Table 3.3.4, Berman and Evans (1995) have divided atmospheric stimuli or elements into four categories: the exterior of the store, the general interior, the layout and design variables, and the point-of-purchase and decoration variables. It is expected that relevant store atmosphere can be identified through a factor analysis of these variables towards specific individual characters.

For example, in a couple of studies about consumer's "Green Purchase" behaviours, as noticed by Lee and colleagues (2010) based on a survey data of 416 users, quality attributes of a green hotel, such as furniture or textile and beddings, were found as more powerful predictors than the value attributes, like a slogan, in altering the guest's cognition towards the green hotel's overall images. Similarly, a recent study from Hashen (2016) about online

shopping also adapted a typological approach to online shopping atmosphere. Thirteen

Table 3.3.4 Atmospheric Variables, adapted from Turley and Milliman (2000)

1. External variables
 - a. Exterior signs
 - b. Entrances
 - c. Exterior display windows
 - d. Height of building
 - e. Size of building
 - f. Color of building
 - g. Surrounding stores
 - h. Lawns and gardens
 - i. Address and location
 - j. Architectural style
 - k. Surrounding area
 - l. Parking availability
 - m. Congestion and traffic
 - n. Exterior walls
2. General interior variables
 - a. Flooring and carpeting
 - b. Color schemes
 - c. Lighting
 - d. Music
 - e. P.A. usage
 - f. Scents
 - g. Tobacco smoke
 - h. Width of aisles
 - i. Wall composition
 - j. Paint and wall paper
 - k. Ceiling composition
 - l. Merchandise
 - m. Temperature
 - n. Cleanliness
3. Layout and design variables
 - a. Space design and allocation
 - b. Placement of merchandise
 - c. Grouping of merchandise
 - d. Work station placement
 - e. Placement of equipment
 - f. Placement of cash registers
 - g. Waiting areas
 - h. Waiting rooms
 - i. Department locations
 - j. Traffic flow
 - k. Racks and cases
 - l. Waiting queues
 - m. Furniture
 - n. Dead areas
4. Point-of-purchase and decoration variables
 - a. Point-of-purchase displays
 - b. Signs and cards
 - c. Wall decorations
 - d. Degrees and certificates
 - e. Pictures
 - f. Artwork
 - g. Product displays
 - h. Usage instructions
 - i. Price displays
 - j. Teletext

statements from Cyr and Bonanni (2005) were adopted to measure the website design characteristics. Furthermore, such typologies also provides possible indicators for latent environmental variables (Dunlap and Van Liere, 1978; Hartmann and Apaolaza-Ibáñez, 2012). For example, by the work from Hartmann and Apaolaza-Ibáñez (2012), three items were confirmed from the New Environmental Paradigm (NEP) scales (Zimmer et al., 1994) as a valid and reliable indicator of consumers' environmental concerns about a green energy brand. All of them were loaded with a high level of alpha above 0.96.

3.3.5 The S-O-R in IB Studies

The S-O-R paradigm, especially the Mehrabian Russell model, has been one of the main models that used in IB studies of emotional responses to shopping atmosphere. As stated by Donovan and Bossiter (1982), whereas cognitive factors may largely account for product choice and for most of the planned purchases within that store, the emotional responses induced by the environment within the store are primary determinants of the extent to which the individual spends beyond his or her original expectations. Environmental factors, such as the shopping ambient (Sherman et al., 1997), in turn lead to longer browsing time (Park et al, 2012), product return (Lantz and Hjort, 2013), and other behaviours in an impulsive manner.

For example, the pleasure, the first aspect of the PAD dimension, was found mediating a wide range of influences from contextual stimuli such as website quality (Parboteeah et al. 2009), shopping ambient (Sherman et al. 1997) employee friendliness (Xu, 2007), or consumer behaviours. This can be explained by the fact that impulsive buyers are essentially hedonic seekers and are prone to stimulus with a hedonic value (Rook, 1987). For instance, Sherman and colleagues (1997) firstly considered the Mehrabian-Russell model into an impulse manner. Their study found that store ambience, social factors and store design, were significantly and positively associated with shopping pleasures. In turn, consumers shopping with high pleasure were willing to spend more time and money on their purchase. Furthermore, a study by Chang and colleagues (2011) proposed a three items measure on shopping atmosphere. Of these, ambient and social interaction had loaded high level associated coefficient with reliability above 0.87 and around 60 and 17

percentages in IB variance, respectively. The results had a full mediation effect of pleasure on the relationship between environmental cues, such as employee friendliness, and impulsive purchase. Especially, according to Change and colleagues' study, hedonic motivations of consumers also play a moderation role on the relationship between the social characteristic of the retail environment and consumer's shopping pleasures.

In addition, Bellizzi and Hite (1992) suggested that environmental cues inducing shopping pleasure tend to be more effective than the other stimulus in altering consumer behaviours. For example, as compared to red design, consumers reacted more favourably in a blue environment and correspondingly resulted in higher stimulated purchase rates. Such colour effects were more strongly linked to pleasure than arousal and dominance.

Another dimension of PAD, arousal, also shows a great implication on impulse buying. On the one hand, as the Mehrabian-Russell model posits, the arousal dimension interacts with the pleasures; thus, some environmental cues carrying hedonic values were also usually found as associated to arousal and thereafter the relevant behaviour responses (Baker, Levy and Grewal, 1992; Chang et al. 2011). For example, Donovan and colleagues (1994) suggest that higher arousal reduces unplanned spending in unpleasant atmospheres. On the other hand, arousal could be induced by environmental cues, which may not necessarily contain hedonic values (Turley and Millian, 2000). A field experiment by Yalch and Spangenberg (1988) found that musical conditions of the store had significant effects on arousal, but not on pleasure and dominance. Younger shoppers tended to spend more time shopping when background music was played, while older shoppers perceived that they spend more time in the store when foreground music was played. Similarly, the study by Xu (2007) also noticed that crowding only significantly induced arousal, but not pleasures affections.

Notably, the effects from environmental cues to arousal, or arousal to buying behaviours, tend to follow a curve relationship rather than a linear one. Crowley (1993) suggested that the arousal dimension of consumer response to colour follows a U-shaped function across the wavelength in the visible spectrum, with the extreme wavelengths being associated with higher activation level. In addition, there might be a curve relationship between the

level of consumer arousal and their buying intentions. For instance, the study by Donovan and colleagues (1994) suggested that increasing emotional arousal could marginally reduce unplanned spending.

The last dimension, dominance, is regarded as a weak representation of individual's emotion states by Russell and Pratt (1980) and deviates from some modified Mehrabian-Russell Model (Sherman et al. 1997). One of the main reasons for the elimination of dominance dimension from the PAD is because researchers believe that dominance requires certain cognitive interpretations by consumers and hence, it is not deemed applicable for situations calling for affective response, such as an impulsive purchase. Empirical studies in the dominance dimension have also failed to establish significant relations between the stimulus and dominance or between the dominance and response (Donovan and Rossiter, 1982). Based on such concerns, later works by Donovan and colleagues, such as Donovan and colleagues (1994) and Russell and Pratt (1980), excluded dominance from the Mehrabian-Russell Model with further emphasis on its lack of both theoretical reasons and empirical supports. However, such conclusion might be hoodwinked.

From the standpoint of consumer traits, dominance plays a crucial role in mediating shopping atmosphere and consumer behaviour/behavioural intention. This dimension refers to the extent to which the individual feels in control of, or feels free to act in a situation. It counts as an important individual character, self-control/self-regulation (Werthenbroch, 1998; Baumeister, 2002). Jaworski (1981) indicated that consumers' attempts to control their unwanted consumption impulse may influence many everyday purchases with broad implication for the marketer's pricing policies. The environmental factors may backup various types of marketing control. Meanwhile as argued by Mattlia and Wirtz (2008), unfamiliar shopping atmosphere may induce a higher level of self-control than a familiar one, thus reducing the number of purchases made in an impulsive manner. Table 3.3.5 provides a brief review of IB studies in an S-O-R approach.

Table 3.3.5 "S-O-R" paradigms in Impulse buying

Study	Stimuli	Organism	Response
Xu (2007)	Ambience, Design, Employee, Crowding	Pleasure; Arousal	Impulse Buying
Parboteeach and Valacich (2009)	Task-relevance and mood relevance cues	Shopping enjoyments	Browsing Behaviors
Lee and Johnson (2010)	Ambience, Store excitement, Sale associate	Positive Emotional Response	Impulse Buying Tendency
Chang (2011)	Ambient, Design, Social Characteristics.	Positive Emotional Response	Impulse Buying Tendency
Shen and Khalifa (2012)	Telepresence and Social Presence	Virtual experience	Impulse Buying
Chang and colleagues (2014)	Ambient, Design, Social Characteristics.	Positive Emotional Response	Impulse Buying Tendency
Mishra and colleagues (2014)	Perceived Risk	PAD	Impulse Buying Tendency
Huang (2016)	Social Capital and Content Attractiveness	Peer Communication and Browsing Activities	Urge to Buy
Xiang and colleagues (2016)	Shopping Goals, Shopping Types	Cognitive Reaction, Affective Reaction, and Para-social Reaction	Urge to buy

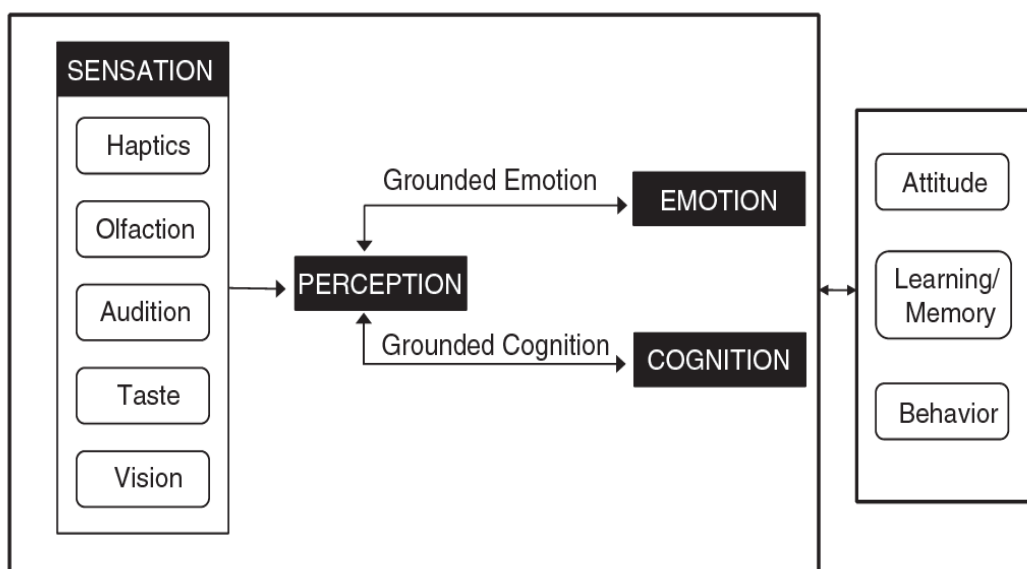
3.3.6 Sensory Marketing

While environmental psychologists are more concerned with an individual's cognition about the shopping atmosphere, others have noticed that some purchase intention or behaviour can emerge due to the embodiment of consumer's sensory favour, which may occur prior to a consumer's perception (Krishna, 2012; Krishna and Schwarz, 2014). Thus, environmental cues associated with specific sense experiences of consumers may provide potential subconscious triggers that alter consumers' perception about a product. A cluster of research has put their interests on the connections between consumers' senses and their perceptions or behavioural decisions (Hultén, 2011; Peck, 2011). In this regard, empirical findings suggested that as compared to explicit market communications, subconscious triggers such as sensory attributes may be a more powerful predictor of purchase intentions.

As defined by Krishan (2012), "*sensory marketing is an application of understanding of sensation and perception to the field of marketing, to consumer perception, cognition, learning, preference, choice, or evaluation*". A typical conceptual framework is provided as

Figure 3.3.6

Figure 3.3.6 A framework of sensory marketing, adopted from Krishan (2012)



In particular, sensory marketing distinguishes between sensation and perception. Basically,

the sensation is neurological and biochemical in nature. It occurs when the stimulus encounters the receptor sensory organ of an individual. Perceptions refer to an individual's awareness or understanding of sensory information. While both of them are stages of the process of the senses, they may reach a different conclusion. For example, Krishan (2012) used a Café wall illusion. The horizontal lines are actually parallel, which is the same as the sensation system. This is because the light receptor in one's eyeball received light reaching in a horizontal manner. However, as humans are long trained to expect things to bend down when a block is placed on top of it, the subsequent perception on the picture would indicate that the lines were not parallel after one's brain interpreted the sensation. This phenomenon is called Visual perception biases. In terms of consumer researches, such bias can be pervasively found as effective methods for marketers to alter consumers' buying decision (Wansink and Van Ittersum 2003; Chandon and Wansink, 2007). Similarly, bias can also be observed from other dimensions of sensations, such as from the haptics (Peck, 2011; Peck and Childers, 2003). In particular, recent studies have suggested that consumer sensation might matter a lot as far as online purchases are concerned. It is suggested that when the development of e-marketing platforms inevitably forbids consumer from touching apparel products, it creates a stronger need for product-specified shopping content to substitute a sensory experience, which consequently engenders an online impulse buying (Park et al., 2012).

Hence, sensory attributes, such as colour, design, fabric and fit, may play a key role in encouraging apparel product purchase intentions (Then and DeLong, 1999; Bei et al., 2004) and has a great potential in explaining online impulse buying. Yet, not much work has been conducted in this field so far (Youn and Fabor, 2000; Peck and Childers, 2006; Tifferet and Herstein, 2012).

As observe from the aforementioned studies, although the types of environmental stimulus can vary greatly across product features, shopping context or social factors, they trigger purchase behaviours in a similar manner. Early-stage IB literature suggested that IB is used interchangeably with unplanned behaviours and links IB with specific products features besides viewing it from an "S-R" paradigm. By this means users of the "S-R"

paradigm can make direct linkages between unplanned sales and relevant product designs or products categories. Thus, it provides reference points for convenient and quick decision makings for managers. However, IB is later noticed as more complicated than an unplanned purchase because it involves a more complex psychological process of the buyer and can assume different forms (Stern, 1962). The "S-O-R" paradigm suggests that consumers are embedded in a shopping atmosphere more than shopping environments, which, in turn, denotes an intentional control and structuring of the later. Stimulus from the shopping atmosphere is mediated by consumer's emotional states and thereafter, alters a behavioural intention. As IB is long-termed as emotional behaviour, the "S-O-R" has been found to be successful in understanding the connection between environmental stimulus and impulsive purchase. Especially, IB was pervasively found to be predictable from positive shopping emotions that were induced by certain shopping ambient, product designs and social characteristics (Lee and Johnson, 2010; Chang, Shen and Khalifa, 2012).

Yet, it is noteworthy that outcomes from the S-O-R model may vary as there are moderators at play. For example, Change (2011) suggests that buying impulsiveness has a significant and positive influence on the connection between shopping ambient and shopping enjoyments. Consumers scored high score on buying impulsiveness were found to be more susceptible to shopping ambient conveying a hedonic value; therefore, they are more likely to shop with positive emotions than others. In this regard, whereas S-O-R provides great insights on the P-E transactions, it may also provide biased results when the antecedents of behaviours, such as buying impulsiveness (Rook, 1987), were usually underplayed in the model. As a matter of fact, personality traits are hierarchically arranged and are known to alter behaviour in turn (McCrae and Costa, 2008). In this case, the buying emotion is known as an important sub-trait of trait emotionality, and its impact on IB is also subject to higher order traits, such as the general impulsiveness and the neuroticism (Johnson and Attmann, 2009; Shahjehan et al., 2012). Hence, emphasising on shopping environments may impair the benefits of viewing IB behaviour as a holistic entity, comprising of antecedence, triggers, processing and outcomes of behaviour. Thus, neither

the "S-R" nor the "S-O-R" paradigm is able to offer a comprehensive account of IB.

3.4 Impulse Buying Traits

In addition to the "S-O-R" paradigm, the rest of IB literature tends to view IB as a trait model, suggesting that IB behaviours or behavioural tendencies are underlined by a wide range of personality traits, such as neuroticism, buying impulsiveness, and some situational traits like shopping enjoyments or ego-depletion, which refers to specific P-E transactions under marketing designs (Fishbach and Lbaroo, 2007). Thus, impulsive buyers are different from others in case of regional differences (Kacen and Lee, 2002), gender difference (Dittmar et al., 1995), genetic difference (Bratko et al., 2013), as well as based on their level of dependence to marketing communications (Thompson and Prendergast, 2015). While each IB traits performs functions to IB behaviour or behavioural tendencies, their impacts tend to intersect. For instance, individuals loaded with high neuroticism are found to be more prone to immediate shopping enjoyments (Ramanathan and Menon, 2006) are, therefore, less proficient at managing their impulses to buy (Ramanathan and William, 2007), which leads to impulsive purchases (Fetterman et al., 2010). Yet, these interactions have rarely been investigated until the recent emergence of integrative personality models, such as the 3M (Mowen, 2000; Pirog and Robert, 2007; Sun and Wu, 2011). Whereas these studies have focused on a limited number of IB traits, the following sections of this chapters aim to provide a comparably comprehensive account of the IB trait hierarchy, comprising of elemental traits, compound traits, situational traits and surface traits.

3.4.1 Elemental Traits

Elemental traits refer to the inherent properties of IB traits. They are constituted by a cluster of genetic-based trait factors related to IB consumers. Notably, although empirical studies on the genetic basis of IB traits have only emerged in the very recent past (Punj, 2011; Bratko, 2013; Cai and colleagues, 2015), IB has long been postulated as inheritable (Rook, 1987; Brewer and Potenza, 2008). For example, Roney and Johnson (1997) suggested that a large number of impulsive purchases are attributed to deficits in consumer attention

measured by an ADHD scale (Attention Deficit Hyperactivity Disorder), which is highly hereditary (McGue and Bouchard, 1998). Hirschman and Stern (2001) found that alleles of two neurotransmitter genes were also associated with impulsive purchase and drug addiction.

In general, in addition to the genetic clue of IB traits, two cluster studies can be noticed. One is conducted in terms of neuroscience that is termed as neuro-marketing in consumer researches. By equipping modern techniques such as the brain scans techniques or EGG, researchers attempt to connect certain brain components with impulsive purchases (Whelan et al., 2012). Most of these studies originate from clinical studies on brain/hormonal system in relevant IB traits, such as impulsivity or self-control (Raab et al., 2011), before being replicated to marketing domains. As an emerging sub-discipline in marketing, they added insights on IB knowledge from new perspectives, albeit with limited numbers of studies. Neuro-study on behaviour usually generates high expense, which may be beyond the reach of the researcher. Thus, the majority of researches so far in this field have resided on another cluster of studies, which applies a factor model of personality traits, such as the elemental traits residing in the 3M model (McCrae and Costa, 2008; Di Muro and Murray, 2012).

Especially, elemental trait is the most fundamental level trait in the 3M trait hierarchy. It comprises of the Big Five personalities models (BFM) and borrows items from evolutionary psychology. The initial 3M model by Mowen (2000) adopted the Saucier (1994) view of BFM. However, concerning the various types of BFM had used in IB studies so far, this section treats BFM as a general pool of all types of Big Five personalities. Such treatments will not impact the reliability of the 3M model or the review given that equality among BFM models has been widely and empirically supported (Ryan and Xenos, 2011; Wilt and Revelle, 2015). In this regard, for the convenience of description, factors included in the 3M model of IB traits are labelled as 1) Openness to Environments; 2) Conscientiousness; 3) Extraversion; 4) Agreeableness; and 5) Neuroticism. Two items borrowed from evolutionary psychology are labelled as: 1) Materialism; and 2) Arousal.

3.4.1.1 Openness to Environments

BFM includes openness as a general measure on intelligence, which describes individuals that are neither rigid in his/her subjective views nor in their expectation towards others (Mondak, 2010). Basically, individuals with high loading on this personality dimension are found to be imaginative and a broad range of interests (McCrae and Costa, 2008). Thus, IB studies assume consumers with high loading Openness are curious to know more about products or experiences. In turn, they may have broader shopping interests and are more likely to buy things for interests than those with low scores. However, such hypothesis is still open to further investigation. For instance, while two studies using a similar sample of 508 Indians rejected the hypothesis ($r=-0.17$, $p=0.607$; $r=0.037$, $p=0.852$) (Badgaiyan et al., 2016; Badgaiyan and Verma, 2014), Sun and colleagues (2004) reported a significant and positive relationship between openness and the tendency for IB. Indeed, such disagreements can be pervasively noticed among recent IB studies, such as Bratko and colleagues (2013) and Thompson and Prendergasts (2015).

One possible explanation for these divergent findings could be that different IBT instruments were used in the studies. Whereas Sun and colleagues (2004) only measured the cognitive aspect of the impulsive purchase based on the buying impulsiveness scale from Rook (1987), studies by Badgaiyan and colleagues applied both cognitive aspects and affective aspects measures, which included the urge to buy and buying impulsiveness. As suggested by Steinberg and colleagues (2008), components of impulsivity, such as impulsiveness and urgency, may indeed have different neural underpinnings and hence, signify a different function to general impulsive behaviour, such as risk-taking or antisocial behaviour (Steinberg, 2008; Monahan et al., 2009). In this regard, different measurements on IBT may actually measure different constructs and as a result, draw diversified results. Therefore, further research is needed on the debate between unidimensional and bidimensional view on IBT (Badgaiyan and Verma, 2014).

3.4.1.2 Conscientiousness

The second factor included in the general BFM pool is that of consumer Conscientiousness, which elucidates individual characteristics such as to be self-controlled, responsible to

others, hardworking and goal-oriented (Robert et al., 2009). High loading Conscientiousness individuals are known to be well organised and methodical. Consumers with high Conscientiousness scores were found to be reflective and evaluating thoroughly before making a purchase decision (Chen, 2011). They also tend to plan for future expenditures (Donnelly et al., 2012). Accordingly, it is assumed that Conscientiousness would be negatively related to impulsive purchase by preventing consumers from succumbing to the immediate hedonic stimulus. A wide range of studies has supported this hypothesis (Thompson and Prendergast, 2015; Turkyilmaz et al., 2015; Olsen et al., 2016).

3.4.1.3 Extraversion

The third elemental factor is that of Extraversion. Eysenck and Eysenck (1985) propounded that extraversion indicated an impulsive person with weak self-control. John and Srivastava (1999) further complemented Extraversion by stating that high Extraversion individuals are social, active and have a tendency to experience positive emotions. Accordingly, consumers with high loading Extraversion were found to be more willing to have para-social interactions with sale staffs and seek varieties in products (Chen, 2011). Thus, Extraversion is supposed to predict impulsive purchase positively. Recent works confirm such viewpoint (Bosnjak et al., 2007; Badgaiyan and Verman, 2014). Especially, as suggested by Verplanken and Herabadi (2001), Extraversion was found to be positively correlated with affective aspects and cognitive affects; therefore, it may account for various types of IB components, such as novelty seeking, an irresistible urge to buy and sensation-seeking. In addition, Dittmar and colleagues suggest that Extraversion may also reveal some functional aspects of impulse buying (Dittmar et al., 1995; Dittmar et al., 1996, Dittmar and Drury, 2000; Dittmar, 2005). For instance, high Extraversion consumers tend to express a group identity or express themselves through impulse buying.

3.4.1.4 Agreeableness

Agreeableness indicates that individuals like to maintain positive relations with others and reflects the style adopted by an individual when interacting with others (McCare and Costa, 2008). High Agreeableness indicates a friendly, cooperative and trustful individual. IB studies generally assumed a negative linkage between impulse buying and Agreeableness

(Verplanken and Herabadi, 2001; Badgaiyan et al., 2016). This is premised on the logic that impulse buying is usually associated with inclination towards disregarding harmful consequences; therefore, an individual with agreeableness will try to avoid impulsive purchases. However, empirical studies about such hypothesis have shown diversified findings: while some negative and significant coefficient was indeed reported (Bratko et al., 2013; Badgaiyan et al., 2016), some of them revealed a positive and significant relationship between the two (Shahjehan and colleagues, 2011; Sun and Wu, 2011). These disagreements, on the one hand, may be attributed to the variation in measurements applied to IBT, which has been mentioned before. On the other hand, it might be caused by ambiguity on IB concepts. As justified in Chapter I, IB assumes various forms. Under Stern (1962), the dimension of Agreeableness apparently has positive implications on Suggestion type of IB, wherein suggestion from others dominates the buying behaviour/intention. Although the difference has been noticed for long, not its importance was not emphasised until the previous section of this thesis. Whereas Section One only provides a qualitative integration, further empirical works are encouraged (Sharma et al., 2006; Sharma et al., 2010; Punj, 2011).

3.4.1.5 Neuroticism

Neuroticism has been associated with a variety of labels under different BFMs such as emotional instability or reversed coded as emotional stability (NEO-PI; McCare and Costa, 1987). But in general, this dimension describes an individual's inclination to psychological distress. High scores in neuroticism mean that a person is prone to insecurity and emotional distress. Costa and McCrae (1995) suggested that increased loading in neuroticism would cause individuals to get depressed, anxious, impulsive, and intensive. In this manner, several studies have linked this dimension to, as described by Rook (1985), "neurotic behaviour", such as impulsive purchases or compulsive purchases (Mick, 1996; Johnson and Attmann, 2009; Shahjehan et al., 2012). Neurotic consumers were found to be more prone to instant gratification rather than delayed satisfaction. They tend to be more impulsive in subsequent decision makings if such their goals are not attained (Ramanathan and Menon, 2006). High Neuroticism consumers also find it difficult to get

rid of their negative emotions after making a purchase (Ramanathan and William, 2007). In addition, Neuroticism frequently predicts behavioural dysregulation (Fetterman et al., 2010) and links itself to buying behaviour that is acted upon in haste with little attention to self-control (Hoch and Loewenstein, 1991; Rose 2007). All these pieces of evidence that suggest neuroticism has an effect on impulsive purchases.

3.4.1.6 Materialism

Materialism, along with the need for arousal, constitutes the evolutionary part of elemental traits under the 3M model. In general, materialism refers to *“the value that individual’s orientation towards the role of possessions in life, serving to guide the types and quantities of product purchased”* (Belk, 1985; Richins and Dawson, 1992). A wide range of marketing studies has extended this definition to consumer researches (Kasser et al., 2007; Zarco, 2014). For example, Dittmar and Bond (2010) defined its relevance to IB as *“describing consumers who attach value to material objects and find meaning and identity in possessions”*. Wu (2006) further explained materialism *“as usually fail to resist a temptation to buy”*.

It has been argued that humans gain competitive advantages if they are equipped with proper tools (materials). Accordingly, in marketing domains, materialism trait has been found to have a positive influence on an individual's social effectiveness from economic perspectives. High competitiveness would subsequently lead to high shopping satisfaction (Kilbourne, 1998). As analogized by Thyroff and Kilbourne (2018), whilst buyer and sellers compete with each other in markets, materialism helps control behaviours to ensure that it conforms to the consumer’s self-interests (Kassiola, 1990).

In fact, materialism can predict impulsive purchases or purchase intentions in many regards. For example, drawing on the constructional model of material possession and symbolic self-completion, Dittmar and colleagues (1996) found that high materialism would prompt females to spend more time and budget on buying jewellery so as to establish a social identity. In contrast, low materialism consumers were found as being reflective of their purchase and more concerned with whether an object is good value for money before making a purchase. Similarly, Troisi and colleagues (2006) held that individuals who are

less materialistic and parsimonious with money are conservative with how their money is spent and have a negative correlation with impulse buying.

3.4.1.7 Arousal

Recalling the Mehrabian-Russell Model, arousal is described as a key dimension of consumers' emotional states. Indeed, store atmosphere must evoke phasic arousal reaction to attract consumers (Holbrook and Hirschman, 1982; Groeppel-Klein, 2005; Di Muro and Murray, 2012). From a wide psychophysiological viewpoint, arousal is a fundamental feature of behaviour and serves as the neurophysiological basis underlying all processes in the human organism, such as the basis of emotions, motivations, information processing, and behavioural reactions (Kroeber-Riel, 1979).

However, the connection between Arousal and in-store behaviour remains nebulous. Empirical studies exploring these issues have often yielded divergent findings. For example, it has been questioned as to whether evoking emotional arousal is necessary for altering consumer behaviours (Donovan et al., 1994; Groeppel-Klein and Baun, 2001). Groeppel-Klein (2005) suggests that such inconsistency may be caused by two reasons. Firstly, it could be because studies have applied different measurements on arousal (Brown et al., 2011). A variety type of measurements on arousal had been applied by previous kinds of literature, such as PAD scales (Russell and Mehrabian, 1977), Facial Affect Scoring Technique (FAST, Ekman et al., 1971), computer-aided face recognition (Chon et al., 1999) and Electrodermal Reactivity (EDR) approaches, as suggested by Groeppel-Klein (2005). Due to diverse measurements, the ascertainment of arousal validly becomes very difficult. Secondly, the underlying inconsistency in empirical evidence may also be attributed to the fact that not all investigated environmental cues are known to induce arousal. Furthermore, arousal is also difficult to capture as it may increase without a consumer's conscientiousness (Brown et al., 2011).

In the field of IB, despite the aforementioned diverged understandings, literature has widely suggested that the trait of buying impulsiveness plays a crucial role in functioning emotional arousal, which, in turn, influences decision making (Rook, 1987; Weinberg and Gottwald, 1982). In general, high versus low arousal of positive emotions were found to predict

general impulse buying intentions/behaviours (Li and Yi, 2008; Herabadi et al., 2009). Consumers with high loadings in buying impulsiveness were also found with high loading in arousal scores, usually measured by means of verbal scales developed by Russell and Pratt (1980). It turns out that high arousal not only indicates consumer behaviour in a more emotional way in response to market communications but also reflects their style in information processing (Kacen and Lee, 2002). For example, Sun and Wu (2011) suggested that highly aroused consumers may significantly less mindful of their buying consequence.

Notably, impacts from arousals are often correlated with impacts from pleasures; thus it might be difficult to distinguish between the influence of both (Kacen and Lee, 2002). As a result, some studies also created a compromised measurement referred to as hedonic arousal in order to measure a mixed effect (Sarkar, 2011). In this case, extra precaution should be taken on research methods as there could be a curve relationship instead of linear.

3.4.2 Compound Traits

Compound Traits are known to reside at the second level in the 3M model hierarchy. They are conceptualised as cross-situational traits, which is why their impact on behaviour will only be influenced by elemental traits and culture or subcultures (Mowen, 2000). The behavioural functions of compound traits were mainly inquired in clinical and medical journals with a focus on replicable behavioural patterns or development of proper psychotherapy for behavioural disorders, such as aggressive behaviours, suicides or eating disorder (Waxman, 2009). Marketing studies later replicated those works to consumer research. It is assumed that traits governing general behavioural manors will also play a key role in governing shopping patterns. For example, Rook (1987) extended the research in impulsivities (Eysenck et al., 1990, Barratt, 1995) and suggested that higher buying impulsiveness causes consumers to more easily pass their normative evaluations buying things impulsively. Similarly, Baumeister (2002) introduced the trait of self-control to consumer research, arguing that impulsive purchase is a consequence of a failure in self-control.

Yet, while these marketing works leveraged relevant trait studies, they also inherited inconsistent understandings among these studies: While a wide range of clinical studies and medical journals has suggested that impulsivity is a sub-facet under the self-control scales (Kendall and Wilcox, 1979; Brief Self-Control Scale; Tangney et al., 2004), others view impulsivity as an independent psychology construct, although is highly correlated to self-control (Barratt, 1995). For instance, Kendall and Wilcox (1979) suggest that impulsivity is a sub-facet of self-control and relevant impulsive behaviours are viewed as stoppable. It is caused by failed self-control and hence, can be corrected through developing self-control. In contrast, others have suggested the two traits are separate psychological constructs. Impulsive behaviour entails fast decision making and has no relation with an individual's self-control system (Meichenbaum and Goodman, 1971).

Consequently, the divergence on self-control and impulsivity has had an impact on IB researches. It has been questioned whether an IB involves the self-control process or not. For instance, the seminal IB research by Rook (1987) on impulsiveness emphasised the predominate role of consumer impulsivity. They believed that the urge to buy impulsively is irresistible and hence, uncontrollable. Consumers with high buying impulsiveness are known to acquiesce to their buying urges and make limited use of their cognitive process. As noticed by Rook and Fisher (1995), once consumers perceived that their purchase was normatively acceptable, their shopping decisions were made in an impulsive manner with no or limited involvement of the cognitive process.

In contrast, many IB studies have associated impulsivity with self-control (Baumeister, 2002). It is believed that whether a consumer makes an impulsive purchase, according to Baumeister and colleagues (1994), this decision may largely depend on self-control resource that is temporarily available to that consumer. A consumer is prone to make a purchase on an impulsive manner only when the self-control resource is depleted. Thus, its finding is contrary to that of Rook and colleagues (Rook and Hock, 1985; Rook, 1987; Rook and Fisher, 1995) by stating that the urge to buy impulsively can be controlled. Impulse buying only occurs when consumers are unable to control themselves. Accordingly, various items were developed with a focus to assess how well people respond in controlling

impulses, rather the degree of buying impulsiveness (Baumeister et al., 1994).

More recently, Hofmann and colleagues (2009) suggested a dual-process view on the self-control system in terms of its relevance to the impulsive system. It posits that impulsive behaviour is an interaction taking place between positional factors and dispositional factor under an intervention type dual process, where the self-control system and the impulsive system can be separated despite interacting with each other. However, the dual processing view is more relevant to the decision-making process of an IB and thus lacks a comprehensive account.

Despite diversified views, both self-control and impulsivity are suggested to play an important role as far as IB is concerned. While studies have accepted Rook's view, they cannot avoid concerns about issues related to, although not necessarily belonging to, self-control, and vice versa. However, it is noteworthy that the two traits may alter impulse buying via different pathways. Each pathway may be functioned by unique sub-paths. For example, failure in self-control under the general IB *impulsivity* is functioned under the rationale that IB consumer may have different self-control focus (hedonic) to others (utility). In contrast, the sub-path of loss in control under the general IB *self-control* is functioned by the rationale that the egos of IB consumers are depleted when the others act based on their free will. It can be noticed both the paths to IB behaviour involve a loss in self-control but are intrinsically different. *Self-control*

According to Baumeister (2002), self-control refers to the self's capacity to alter its own states and response. Based on this view, a strength model of self-control was developed (Baumeister et al., 2007). The model suggests that overriding one's predominant response tendency will consume and temporarily deplete an inner control resource. However, the reservoir or regulatory resources are limited. Thus, the deficit in regulatory resource would cause the person to fail to override his original behavioural intention to a more desired one. This state of reduced capacity for self-control is called "ego depletion". A wealth of documents has suggested that impulse buying actually is a consequence of ego-depletion (Baumeister, 2002; Vohs and Faber, 2007; Vohs et al, 2018). Yet, ego-depletion is basically caused by situational factors, such as due to evaluation among various

products. Considering the property of compound traits, self-control is supposed to be more of a situational trait than a compound one. Thus its function to IB would be revisited later. In addition, it is noteworthy recent studies have extended discussion on individual's control process to a long term perspective and developed a new construct referred to as grit (Duckworth et al., 2007). While self-control describes the capacity to regulate emotional states or behavioural intentions amidst temptation, grit denotes the perseverance and passion for long-term goals. These two items are found to be strongly correlated but operate in different ways and over different timescales. While self-control reconciles behaviours to valued goals, grit entails working assiduously towards a single and superordinate goal over years or even decades (Duckworth and Gross, 2014). Thus, grit is unlikely to get involved by influences from situational variables. Given its connection to self-control, grit might also play a role in IB. In this regard, it might be considered to be a potential alternative component in the 3M model. However, as far as this thesis is concerned, no relevant studies have been found to make a connection between trait grit and impulse buying behaviour/intention. Therefore, this issue is still open for further investigation.

Impulsivity

Impulsivity is widely acknowledged as the dominant trait in altering impulse buying behaviours (Rook, 1995; Kacen and Lee, 2002; Sharma et al., 2010). Studies often use impulsivity and buying impulsiveness interchangeably. However, impulsivity is different from buying impulsiveness. The buying impulsiveness is a uni-dimensional item that was introduced by Rook (1995) to describe consumers' buying decision without thinking and reflecting on the consequence. Basically, it represents the cognitive aspects of consumers' Impulse buying Tendency (IBT) (Badgaiyan et al., 2016). Impulsivity, however, is a multi-dimensional item. It refers to "*a predisposition toward rapid, unplanned reactions to internal or external stimuli with diminished regard to the negative consequence of these reactions to the impulsive individual or others*" (Brewer and Potenza, 2008). It serves as an important psychological construct and plays a prominent role in understanding a wide range of psychopathologies, such as self-damaging or drug addiction (Newman and Wallance, 1993;

Moffitt, 2017). However, diversified understanding can be noticed on its paradigm (Morean et al., 2014).

Impulsiveness

One of the widely acknowledged paradigms of impulsivity is Barratt (1995), who posits that impulsivity is constituted by three sub-traits: 1) cognitive impulsiveness, (quick decision making); 2) motor impulsiveness, (acting without thinking); and 3) non-planning impulsiveness (involves regardless of consequence and lack of forethought). Barratt (1959) developed a 30-item scale to measure these domains (Barratt Impulsiveness Scales, BIS) and it continues to be the most commonly used self-reported measure of impulsivity (Stanford et al., 2009). Subsequent works in marketing usually borrow BIS items to create a measurement on IBT (Impulse Buying Tendency), an instrument that was developed to scale the particular behavioural tendency of an impulse buying (Weun et al., 1998; Jones et al., 1998). Further discussion would be provided in a subsequent section on IBT, especially, given that the surface trait resides in the 3M model.

BAS&BIS

Another view on impulsivity refers to a competing neural circuitry embedded in a human's brain, comprising of a BAS system (Behavioural Activation System) as well as a BIS system (Behavioural Inhibition System). While the BAS system is responsible for stimulus and cues for rewards and regulates approach behaviour, the BIS system is responsible for cues for punishments and regulates avoid behaviour (Gray, 1987; Carver and White, 1994). In this regard, impulsive behaviour is viewed as a consequence of excessively strong tendencies to respond or the inability to inhibit these responses. In particular, individuals with highly reactive BAS are vulnerable to impulsivity and typically learn more from rewards and less from punishments (Verplanken and Sato, 2011).

Alongside this clue, impulse buying can be regarded by consumers' inclination on self-control focus that, for example, how effectively consumers can regulate their behaviour upon being exposed to reward-stimulus (e.g. sale promotions) versus punishments (e.g. an economic loss). Yet, only a few IB works have explored this perspective. Current understanding is limited but heuristic. While studies usually hypothesised that high BAS

would positively predict Impulse buying, their empirical results only showed partial supports. According to Dholakia and colleagues (2006), BAS/BIS functions in relation to different shopping strategies. Consumers with high BAS loading tend to have a *Promotion Focus Strategy* that seeks a positive experience and fulfilment of hedonic desires/materialistic values. In contrast, consumers with high BIS loading tend to have a *Prevention Focus Strategy* that tries to avoid negative outcomes from purchase. Gray (1987) suggested that promotional focus strategy impels consumers to become prone to reward stimuli, such as sale promotion; therefore, they tend to experience more intensive buying desires than others who try to avoid such desires. In turn, strong shopping desire may lead to a more impulsive purchase. However, Dholakia and colleagues argued that this is not the case. While high BAS resulted in strong buying desire, it also helps consumers control such desire by loading deep information processing. This is because when the BAS is active, consumers also get involved with complex cognitive processing. For example, the consumer would need more information to evaluate the rewards, such as examining whether it offers good value for money. In such cases, consumers tend to make a totally rational choice based on careful consideration. This finding basically suggests that the BAS may not only function as the affective IBT in relevance to buying desires, but is also in charge of the cognitive IBT to help control such desires. In this regard, Impulse buying might not merely be a product of dominated BAS system, as suggested by Gray (1987), but could signify a complex dynamic balancing between BAS/BIS and to different IBT aspects.

As far as further studies that aim to contribute in this field are concerned, they are encouraged to test the balancing process among BAS/BIS components. Recent studies have suggested that only fun-seeking and reward responsiveness sub-traits under BAS (Carver and White, 1994) positively predicts compulsive buying, whereas other sub-traits do not exhibit any significant influences (Claes et al., 2010). Similarly, when Ramanathan and Menon (2006) attempted to examine how chronic and temporary hedonic goals drive an impulsive purchase, they observed that the BAS only responds to a subscale of hedonic motivations. Thus, it is held that not all hedonic seekers are impulsive buyers but are

dependent on certain types of interaction between hedonic stimuli and the BAS /BIS. As far as this thesis has been reviewed, no existing works have explored the possible type of interactions.

UPPS (Urgency, Premeditation, Perseverance and Sensation)

With regard to the paradigm of impulsivity, Whiteside and Lynam (2001) created a UPPS scales to assess a four-dimension impulsivity paradigm, including 1) Urgency; 2) Lack of Premeditation; 3) Lack of Perseverance; 4) Sensation-Seeking. Unlike the factor model of Barratt (1995), Whiteside and Lynam's view on impulsivity is multi-dimensional by the inclusion of both cognitive aspects, which describes an act without thinking or planning, and affective aspects such as the urge to act. For instance, all the BIS factors (cognitive aspect) from Barratt (1995) were found to fit under the umbrella of Lack of premeditations of the UPPS. The fun-seeking subscales (affective aspects) from BIA/BAS (Gray, 1987) were found coordinating with dimensions of UPPS, such as with the lack of premeditation, lack of perseverance and urgency (Sharma et al., 2014). To that end, the UPPS tends to be an integrative model of previous impulsivity paradigms. In addition, the UPPS model also exhibits a strong root in elemental traits. According to Whiteside and Lynam (2001), after the removal of all overlapped scales, the UPPS and the NEO-PI-R still strongly suggested a three-factor solution that accounted for 59% variance in the scale.

As it can be noticed, the UPPS model includes both the cognitive measures and affective measures; therefore, it may provide a more comprehensive account of trait impulsivity than others such as Impulsiveness (Barratt, 1995) and the BIA/BAS (Gray, 1987). As a matter of fact, the UPPS dimensions cover most of the contemporary findings of the compound trait of IB.

4.4.2.1 Urgency

The first dimension, urgency, refers to the individual's tendency to experience strong impulses, frequently under conditions of negative affect. Different to Barratt (1995) who opined that urgency is viewed as a separate concept to impulsivity, Whiteside and Lynam (2001) believe that impulsive behaviours are also influenced by affective/emotional issues. Therefore, an impulsivity personality should respond to both type issues; thus, urgency is

identified as a key component of impulsivity through factor analysis. Later works in personality studies have widely supported the inclusion of urgency as one sub-trait of impulsivity under a wide range of behavioural manors (Whiteside and Lynam, 2003; Coskunpinar et al., 2013) and cultural context (Van der Linden et al., 2006).

In IB domains, kinds of literature have long noticed the urge to buy impulsively or the fact that the buying impulse may voluntarily lead to subsequent buying decisions (Rook, 1987; Coley and Burgess, 2003; Parboteeach et la., 2009). As stated by Beatty and Ferrell (1998), "*felt urge to buy impulsively is a state of desire that is experienced upon encountering an object in the environment. It clearly precedes the actual impulse action*". Yet, recent studies have drawn divergent conclusions, suggesting that IB may not necessarily involve an urge to buy; it also does not necessarily proceed to IB. Two studies by Foroughi and colleagues (2012) and Badgaiyan and Verma (2015) stressed on the importance of this issue within two similar samples. They noticed that situational variables such as availability of time and money, or credit card uses may yield different buying consequences among the two samples. According to Foroughi and colleagues (2012), consumers' urge to buy was found to be fully evoked by all the three variables and could predict actual IB purchases significantly. However, under Badgaiyan and Verma's (2015) study, only availability of money and credit card usage were found to be positively connected with the urge to buy, whereas the rest of situational factors, such as shopping enjoyments, time available or sale promotions, were not linked to the urge to buy. However, they were still found to have a positive link with actual purchases. Such findings, on the one hand, suggested that urge to buy cannot always be predicted by similar situational variables, further reinforcing the fact that the internal organism of IB urge is complex; on the other hand, and most importantly, it implied that situational factors can influence actual behaviour without the mediation of urge to buy. By doing so, it clearly questioned the proposition made by early studies that "urge to buy impulsively is a prior stage of impulse buying behaviour (Beatty and Ferrell, 1998)" as it showed that situational factor which is unrelated to the urge to buy still significantly influence the actual impulse buying behaviour.

However, studies have suggested that the urge to buy tends to be more effective in

functioning IB among high impulsiveness consumers. For example, under the experiments carried out by Coskunpinar and colleagues (2013), when induced to negative feelings, such as exhausted and frustrated, high impulsive individuals (measured by impulsivity scale) were found to have more frequent thoughts of "*could not wait for a drink to get relief from their bad feeling*". Similarly, based on studies of online shopping atmosphere, situational variables such as visual appeal and product availability (Liu et al., 2013) or the ease of use and web communication style (Verhagen and van Dolen, 2011) are also noticed as a significant trigger of the urge to buy impulsively, albeit only among high impulsiveness consumers.

Nevertheless, the felt urge to buy, as stated by Badgaiyan and Verma (2015), did not even turn out to be the necessarily the preceding stage of impulse buying; it is an important and significant component of actual impulsive behaviour. Contemporary arts in IB pervasively believe the urge to buy impulsively at least represents a sub-construct under the IBT scales that measure the specific behavioural tendency of IB (Verplanken and Herabadi, 2001). The emergence of urge to buy impulsively may not only require internal factors, such as the urgency, but also external stimulus from the store atmosphere (Parsad et al., 2017). For example, urges to alcohol were found to be highly linked with the temporary feelings of consumers (Coskunpinar et al., 2013). In this view, the urge to buy may stand for both internal and external factors that have an impact on IB. It stands close to impulsive purchase and is correlated with several other IB predictors, such as buying impulsiveness and buying atmosphere (Coskunpinar, 2013; Verhagen and van Dolen, 2011). Therefore, it might serve as an important component of surface traits of IB more than a compound trait that is across-situation trait in nature.

3.4.2.2 Lack of Premeditation

The second sub-construct of impulsivity suggested by Whiteside and Lynam (2001) is Lack of premeditation. It represents an individual's tendency to skip concerns and reflections on the consequence of an act *before* engaging in that act. A wide range of studies has defined IB as unplanned in nature. As stated by Hodge (2004), impulsive purchase is "*unplanned*

and decided on the spot". Verplanken and Herabadi (2001) later included lack of planning into cognitive aspects of consumer impulsive behaviours. It was found to be associated with the low need to evaluate lack of conscientiousness.

Moreover, the lack of premeditation responses to consumers' preference for smaller, immediately available rewards over more valued but delayed reward one is noteworthy (Madden et al., 1997). Thus, it frequently raises economic concerns/criticises onto IB behaviour, such as the functional IB vs. dysfunctional IB (Xiao et al., 2017; Fenton-O'Creevy et al., 2018), Akratic impulse buying (Wood, 1998) or time inconsistency behaviour (Hoch and Loewenstein, 1991; O'Donoghue and Rabin, 2000). Basically, conflicts between long term benefits and immediate gratifications would trigger consumers' self-control system to make sure that consumers will act under long term interests. Impulsive consumers, as identified by lack in premeditation, were found to be less able to override these conflicts. For example, as observed by Wood (1998), when social norms supported impulse control for long term sustainability, delay of gratification would have been weakened in favour of present-oriented expression of impulse. Rather, high loading in lack of premeditation may lead consumer less able to prevent themselves from approaching immediate benefits. Moreover, the increasing willpower and desire to approach such benefit would, in turn, lead to subsequent psychological struggles in consumer's self-control (Hoch and Loewenstein, 1991). Consequently, consumers with weak premeditation were frequently found to suffer both in terms of economic loss (Rook and Hoch, 1985) and psychological cost, such as feelings of regrets guilty (O'Guinn and Faber, 1989).

Most recently, studies by neuro-techs suggested that consumers' failure to override the immediate lure may be resulted by a cognitive disorder: they tend to overestimate the value of immediate gratifications and underplay the role of long term benefits. According to Steinberg (2008), premeditation is underpinned by the frontal area in the brain. In this regard, due to individual differences in the frontal area, specifically the anterior cingulate cortex (ACC, Holroyd and Yeung, 2012), sensitivity to immediate versus delayed rewards may predict their difference in self-control and subsequently, their behaviour intentions or behaviours. With such understanding, Schmidt and colleagues (2017) invited 20

participants to join a guessing game that would reward them either with a small gift after play or a big one after six months. They recorded changes in participants' ACC activities by EGGs and found that impulsive participants lacking in premeditation showed high deviations on their EGG plot, indicating that they amplify the difference between the immediate and delayed rewards by adding more value on the immediate rewards. Thus, it makes the immediate rewards more salient than the delayed ones and gradually removes consumers' self-control process towards long term benefits. In turn, individual tends to reduce their self-control and act in an impulsive manner.

In addition, the lack of Premeditation further suggests impulse buying may not only be products of reduced self-control but also is a well-planned strategy for mood management. This is because, drawing on the neuro underpinning of premeditation, it has wide implications for an individual's emotional states (Banks et al., 2007). A recent study by Tice and colleagues (2018) found when consumers believe their mood state could not be changed by making a purchase, they delayed gratification more effectively. In contrast, if consumers perceive that their moods were susceptible to changes, they respond more actively to immediate gratifications to hedge their bad feelings. As a result, consumers seek immediate rewards feel better than those who act in the long term interest and may end up with worse moods.

Combining the above understandings so far, the sub-trait, lack of premeditations, seems to function on impulse buying behaviours in two ways. Firstly, it removes the self-control target for long term interests. Secondly, it denotes a consumer's mood management strategies. Low loading in permeation would generally indicate that consumers are susceptible to changes and respond actively to immediate gratifications for reducing or eliminating negative feelings.

3.4.2.3 Lack of Perseverance

The third facet of impulsivity under UPPS is lack of perseverance. It describes an individual's ability to stay focus on a task that may be accompanied with difficulties and feeling of boredom. Strelau and Zawadzki (1993) also describe perseverance as the

individual tendency to continue and to repeat behaviour or experience emotions after the cessation of stimuli and stands for different behaviour styles. IB studies often investigate it in conjunction with dimensions such as the lack of Premeditations or positive/negative urges (Sharma et al., 2010; Gąsiorowska, 2011).

From of the viewpoint of neuropsychology, perseverance is believed to have great importance in an individual's self-control process as it regulates the level of information loading. For example, Wang and colleagues (2017) found that lack in perseverance is negatively correlated with the gray matter volume in the anterior cingulate, which is one of the generators of self-control resources. An EGG study by van Noordt and colleagues (2018) found that when impending aversive stimulus was presented, participants generated more high-frequency theta oscillations in the medial frontal area, indicating that they were less able to prevent information processing about overloading external stimuli. In addition, participants' lack of perseverance score was found to positively predict such oscillation in theta waves. Such finding suggests that individuals with less perseverance find it difficult to prevent themselves from overloading information process. For example, consumers may have difficulties in a choosing from a wide range of products (Kopetz et al., 2012; Vhos et al., 2018).

Being less able to prevent irrelevant information in shopping trips would also erode the ability to maintain focus on control targets. Consumers that lack perseverance may purchase more frequently than others. According to a meta-analysis by Coskunpinar and colleagues (2013), lack in perseverance ($r=0.32$) most strongly predict the quantities in indulgence drinking than other impulsivity constructs could. Lucas and Koff (2014), with an experiment of 232 female participants, suggested that a loss in control may be due to the fact that lack in perseverance amplifies the depletion effects (Vhos and Faber, 2007). Consumers with low scores in perseverance are found less able to inhibit irrelevant information loadings in their shopping trips. Thus, they tend to consume more attentional or cognitive resources and as a result, suffer a deeper level of ego-depletion than others. In turn, deeper ego-depletion would lead to reduced ability to control impulse buying urges. Notably, when both premeditation and perseverance may be involved in the self-control

process and are underpinned by the same brain components (anterior cingulate), they function IB in a different perspective. Whereas premeditation could be related to the ability to consider both positive and negative consequence of a decision based on the emotional response associated with that decision, perseverance may refer to the capacity to avoid irrelevant thoughts (Bechara and Van der Linden, 2005).

3.4.2.4 Sensation Seeking

Finally, the UPPS conceptualises sensation-seeking into two aspects: 1) a tendency to enjoy and pursue activities that are exciting, and 2) an openness to try a new experience that may be dangerous. Recent studies found Sensation Seeking may be a distinct psychology construct correlated to impulsivity rather than being a sub-trait of it. For example, a meta-analysis of the UPPS model of impulsivity suggests a distinction between sensation seeking tendency and the psychological process that opposes these tendencies (Duckworth and Kern, 2011). This thesis reserves its opinions on this point as there is insufficient evidence to recommend any constructive comment. Thus, it would adhere to the UPPS model at this stage for the convenience to adhere the systematic structure of the review.

As has been discussed in the section on sensory marketing, consumers may engage with a different perspective of sensations, such as the Haptic or the Olfaction, which, in turn, alters their mood states or behaviours. In IB studies, studies mostly consider sensation seeking in a manner wherein sensations are perceived by the consumer rather the sensation our brain primarily receipts. Accordingly, Babin and colleagues (1994) suggested that there is distinct difference in consumers' perception of shopping values and that of distinct hedonic and utilitarian shopping value dimensions exists. While the utilitarian shoppers are mostly concerned with economic consequences in terms of their decision making, hedonic value seekers place their emphasis on enjoyable shopping experience as well as the emotional outcome of their purchase. In general, impulsive buyers are known to be hedonic value seekers (Yu and Bastin, 2010; Tifferet and Herstein, 2012)

The differences among hedonic seekers and utility seekers also implied different buying outcomes among them. For example, in a study by Jones and colleagues (2006), it was

found that consumers who seek hedonic values may end up with higher shopping satisfaction and higher anticipation for further shopping trips when compared to traditional utilitarian shoppers. However, utilitarian shoppers are more strongly related to re-patronage intentions. In this manner, the outcomes of IB are usually found as emotional items and are often contradictory, such as shopping enjoyments vs. guilty (Geroge and Yaoyuneyong, 2010). This may be because IB consumers generally are less mindful of their shopping outcomes than others. Thus, it is more likely for them to suffer a mismatch between their expected outcomes and the actual product or customer experience (Rook, 1987). When such mismatch occurs, IB often ends up with diverse outcomes, such as feelings of guilt and regret that may be contrasted by the enjoyment of indulgences. On the other hand, contradictory outcomes may also be attributed to the complex shopping experience consumers may have through an IB. Unlike a planned shopping behaviour, IB is indeed a hedonic-focused sense-making process, such as expressing a social identity, exemplified in examples of buying something to receive social acceptance, demonstrate social belongingness (Salman, et al., 2014; Chen et al, 2018), or a strategy for mood management (Gardner and Rook, 1988). While these types of purchase established social identities, they may lead to unnecessary economic costs for consumers; thus, consumers may undertake a comparison of cost and benefit from the purchases. In this regard, buying results of IB tend to be uncertain and dependent.

In addition, sensation-seeking also reflects the style of consumer's mood management. It is well established that IB consumers have different mood states before and after an IB (Xiao and Nicholson, 2013). Consumers can gain positive affections by seeking a pleasant shopping experience (Beatty and Ferrell, 1998). In turn, the changes in their affection evoke their buying impulse in making decisions (Ozer and Gultekin, 2015). Thus, this sub-trait often is found to intersect with consumers' lack of premeditation, which describes the consumer preference in mood management.

There is also some gap about this sub-trait that is left to further investigation. For example, seeking sensation voluntarily leads consumers to be less mindful of their purchase intensity, but only a few studies so far have deployed such discussions in the context of IB (Barrault

and Varescon, 2013). In addition, although a couple of studies drew concerns on the difference between impulse buying and variety seeking (Sharma et al., 2010; Oslen et al. 2016), Punj (2011) contended that they are of limited success due to the measurements being applied to IB and IB components. He suggested that the trait sensation seeking (Zuckerman, 1993) might be a valuable tool that distinguishes the two shopping patterns based on its biological correlates. Yet, this approach has not been explored so far.

3.4.3 Situational Traits

Residing at the third level of the 3M personality hierarchy, it is the situational trait that is conceptualized as the one that interacts with chronic and situational conditions relating to shopping atmosphere. Thus, its influence on behaviour or behavioural intentions are not only functioned by higher-order traits such as the aforementioned elemental traits and compound traits; but are also bounded by situational factors, such as the product design or para-social communications (Park and Lennon, 2004). When the elemental and compound traits respond to an implicit view of personality, situational traits, as well as the hereunder surface traits describe the interactive model of personality and concern the transactions between the individual and the context. Yet, how consumers interact with the environments remains a mystery due to its complexity (Everett, et al., 1994; Sherman et al., 1997; Massara, et al., 2010). Recently, studies have tended to agree on a dual processing model of decision-making, suggesting that the outcome of P-E transaction is internally decided depending on two systems of information processing: affective processing (or System 1) and cognitive process (or System 2) (Smith and DeCoster, 2000; Evans, 2003; Evans and Frankish, 2009; Gunn and Finn, 2015). In particular, Coley (2002) referred the affective process as emotions, feeling states and moods of IB buyers, and the cognitive process as the mental structures and process that are involved in thinking, understanding and interpreting.

The first seminal work about dual processing of IB behaviour was done by Weinberg and Gottwald (1982), where IB was suggested as a product of an affective processing led by situational shopping emotions. Subsequent works further extended such views and widely

emphasised the role of affective processing. Thus, a wide range of interests can be found on affective process components, such as positive/negative shopping emotions, the buying impulse, as well as shopping enjoyments (Sherman, et al., 1997; Beatty and Ferrell, 1998). However, as noticed by subsequent literature, affective components may also get involved in cognitive processing; for instance, emotion is an affective component of an attitude (Aaker and Stayman, 1989) and can also be a precursor to cognitive restructuring (Isen, 1985). A couple of studies began justifying the function of the cognitive process underlying an IB (Hirsheman and Stern, 1999). Notably, Youn (2000) provided an integrated view on the IB dual processing, comprising of a total of six components (three for each process). While the IB affective process is conceptualised by 1) Irresistible Urge to Buy; 2) Positive/Negative Buying Emotions; and 3) Mood Management; the IB cognitive process comprises of 1) Cognitive Deliberation; 2) Unplanned Buying; and 3) Disregard of the Future. Coley (2002) and Coley and Burgees (2003) provided further empirical supports on the components' view of affective and cognitive process, positing that impulsive purchases can be predicted from these components although they can be varied across genders. Yet, the component view on the dual-process has been rejected by a wide range of studies in the dual process (Evans and Stanovich, 2013).

Recently, there has been a growing interest on the cognitive aspects of impulsive purchase, drawing on views on the mental capacity and strength models of self-control (Baumesiter, 2002; Baumeister and Vhos, 2007; Vhos and Faber, 2007). It held that IB is resulted by limited loading in the cognitive process due to consumers' inability to exercise self-control. For example, limited cognitive information processing may lead to unclear behavioural standards or goals, which, in turn, removes the focus of self-control towards a rational and utility choice. Consequently, consumers are ultimately inclined to enjoy shopping and engage in an impulsive purchase. In very recent past, clinical scholars have also tried to concern the cognitive process in accordance with working memories (Alloway, et al., 2016; Nicholai and Moshagen, 2017), which refers to a cognitive processing system that activates, manages, and integrates information in the environment with items retained in memory, so as to facilitate optimal decisions and regulate behaviour (Nagel, Herting, and

Cservenka, 2012). The results suggest that individuals with low working memory loadings are prone to making compulsive purchase, drawing on views on the mental capacity and strength models of self-control (Brooks et al., 2017).

Notably, IB requires co-ordinates between both affective and cognitive systems rather than a single process, although it may depend on an affective processing more than the cognitive processing (Weinberg and Gottwald, 1982; Coley and Burgess, 2003). Verplanken and Herabadi (2001) suggested that when the affective aspects of IBT are a stronger predictor of subsequent IBs than their cognitive counterparts, both processes play a significant role in governing actual IB. Recent works imply that such unequal functions may be attributed to the difference residing in consumers' brain structures. Impulsive individuals are found to have more gray volumes in their limbic systems (Bush et al., 2000), which governs the affective activities, than others. As a result, they tend to experience more emotional arousals and in effect, make emotional decisions more frequently (Muhler and Lawrence, 2015); On the other hand, impulsive buyers may be less adept at processing external stimulus in a detailed manner due to their diminished ability to execute working memories that enable them to respond to large volumes of information processing (Gunn et al., 2015). Hence, impulsive decision makings may involve only a few cognitive processes (Alloway et al., 2016).

While the above studies suggest that the dual processing theory could be one useful account of a reasoning system to explain impulse buying, it noteworthy that the dual processing may also be subject to individual difference. For example, consumers may have different capacity in control attention (Barrett et al., 2004). In the field of IB research, two situational traits were pervasively noticed as underlying dual processing. The first one is IB emotions, comprising of both negative affection and positive affection. It corresponds to the literature that concerns the shopping emotions that consumers may experience during the IB and how it induces subsequent IBs. The second one is consumer's situational loss in self-control. Differencing to the aforementioned impulsivity related loss in self-control, such as due to change in self-control focus (Lack of Premeditation) or giving up self-control target (Lack of Perseverance), situational loss in self-control refers to scenarios when

consumers do not act with their free will but making purchases under a state of ego-depletion.

3.4.3.1 The IB Emotion

Interpreting findings about IB emotions might require extra caution. On the one hand, the aforementioned measuring variety has strongly challenged the validation of measurement on IB emotion, that implying empirical results may be actually heterogeneous and cannot be integrated directly. On the other hand, as noticed by Thompson and Prendergast (2015), IB studies are seldom concerned with shopping emotions distinguishing the trait affect and affect states. While the latter refers to the situational emotion that consumers may experience during shopping, such as the moment of enjoyment or negative feelings, the former describes a cross-situation trait that comprises of two sub traits: negative affect and positive affect. Individuals with high loading in negative traits are prone to negative feelings, and vice versa. From an interactive view of personality model, both the trait affects and situational emotion state play a crucial role in governing subsequent behavioural intentions. Yet, Thompson and Prendergast (2015) found that scholars are merely concerned with one of the two, but end up missing out on important influences from the other. For example, some may be unable to capture the context influences (Mood States, Fishbach and Lbaroo, 2007) whereas others simply miss out on the antecedent assumption that underlines their postulates (Rook and Gardner, 1993). As a result, empirical outputs are often found varying across contexts and lack generality. Corresponding to such research reality, Thompson and Prendergast (2015) suggested that studies may owe reconsideration with an interactive model of both these traits as well as the situational variables. Such suggestion is also consistent with views from the 3M model, which makes an attempt to distinguish the situational traits from compound traits. Such concerns have drawn an increasing amount of attention, but not many efforts have been made so far (Mowen, 2000). However, viewing it from a dual process may impart some benefits. For example, the dual processing refers to a completed information processing as it links the inputs and outputs collectively for a relevant decision-making process. In turn, it offers a more comprehensive account of individual difference on P-E transactions than the other works that merely focus on a single

item or that which the system was able to offer.

Generally, when both positive and negative IB emotions consequently engender an IB, they can act in quite complex and distinct manners (Gardnar and Rook, 1998; Youn and Faber, 2000; Ozer and Gultekin, 2015).

Negative Emotion

Whilst a wide range of clinical studies have found that individuals experiencing negative feelings are less able to resort to maladaptive self-regulatory strategies, show less neural reactivity and behave in unreflective and impulsive manner, it is also suggested that negative feelings may alter an individual's daily consumption, such as an IB (Kshadan et al., 2015).

Primarily, negative emotions highlight emotional gains; consumers with negative emotions have been found prone to emotional gains, such as buying themselves gifts purposely when experiencing an unpleasant mood (Mick and Demoss, 1990; Elliott, 1994). Clinical researches, such as the one conducted by Heath and colleagues (2011), describe such behaviour as therapeutic gift giving that aims to "raise their spirits" when individuals feel low or depressed (Sherry et al., 1995). One recent example of therapeutic IB gift giving can be noticed from the experiment conducted by Sneath and colleagues (2009). Using a sample comprising of 427 US Gulf Coast residents, Sneath and colleagues induced disaster-events based feelings, such as the feeling of loss in control and loss in possession. When these events increased the level of negative feelings, participants were consequently encouraged to buy themselves unplanned gifts in order to relieve their emotional states, recoup losses and restore their sense of self. In this regard, it was concluded that even for those who suffered loss in materials such as possessions, achieving emotional goals may still be the prime focus for individuals blighted by negative emotion.

In addition, negative feelings may highlight emotional gains for self-completion purposes, such as to build a body image (Lucas and Koff, 2017) as well as to fulfil self-esteem (Luomala and Laaksonen, 1999; Bandyopadhyaya, 2016). As suggested by Hoch and Loewenstein (1991), when individuals feel deprived of their possession or social status,

they may adopt behaviours that help them regain a sense of "normalcy" (Delorme et al., 2004). Notably, such process may be contingent on gender difference. For example, as suggested by Dittmar and colleagues (1995), when females are prone to establishing emotional aspects of the self through buying symbolic items, males tend to impulsively buy instrumental as well as leisure items projecting independence and activity.

Besides, negative emotion may curtail the cognitive process involved in an IB; therefore IB consumers were often noticed as being unreflective to their purchases. Whilst a wide range of clinical studies suggested that emotional decision making can be regulated by the cognitive process, negative emotions may consequently engender IB by constraining the loading of the cognition process (Cromheeke and Mueller, 2013). A study by Donnelly and colleagues (2016) found that in case of unpleasant feelings, individuals may enter a narrow, cognitively-deconstructed mindset in order to temporarily blunt the capacity for self-reflection that subsequently and inexorably encourages impulsive consumptions. Recent studies on working memory have ascertained these viewpoints. Derbyshire and colleagues (2014) investigated neurocognitive functioning among 23-compulsive buyers and found that compulsive buyers may experience challenges in several distinct cognitive domains. One of which is the spatial working memory, indicating that an IB decision were made when individuals were less able to record or reflect the shopping atmosphere. Moreover, Van Dillen and colleagues (2009) suggest that such a constrained mindset may also help bring consumers voluntary to aversive stimulus. Their experiments suggest when the cognitive process got depleted, participants eventually released their self-control targets and impulsive behaviours.

Positive Emotion

Apart from negative emotions, researchers appear to concur that IB decision making also involves a hedonic component (Rook and Fisher, 1995; Hausman, 2000). It was held that positive emotions are important mediators of hedonic stimulus and subsequent impulsive consumptions given that IB consumers are often found voluntarily enjoying shopping moments satisfy their hedonic desires or emotional needs (Rook and Fisher, 1995).

Similarly, positive emotions can influence IB by engaging with both affective and cognitive

IB process. For example, positive emotions may initially trigger IB towards emotional goals with respect to the success of efforts or completion of tasks. Numerous literature have considered IB as self-gift behaviours. Different from therapeutic gift-giving in order to provide succour from negative emotions, IB made upon positive emotions is known as reward gift-giving, describing indulgence following successful efforts and imparting feelings of being deserving of a reward (Heath et al., 2011). Studies, such as the ones carried out by Rook and Gardner (1993) and Hausman (2000), suggested that reward gift-giving is a common method of product selection. Examples include a dieter who rewards himself for having lost weight; consumers allow themselves to buy things they do not necessarily need but only to reward their previous performance. As Lai (2010) recently observed, when viewing money as rewards, adolescents tend to have a positive affection during their shopping trips and in turn, more on both time and money on shopping. In this context, positive emotions could positively predict IB by engaging with emotional gains.

On the other hand, positive emotions also curtail the information loading in cognitive process and weaken the self-control process. For example, IB consumers often found themselves unable to refuse shopping enjoyments and as a result, ended consuming things they did not need. Fedorikhin and Patrick (2010) suggested this may be because positive state emotion tends to lower self-monitoring.

Notably, while the above review suggests that positive and negative emotions can engage with the affective process and cognitive process, respectively, they can also have interaction effects (Evans and Stanovich, 2013). For instance, negative emotions may also discourage impulsive purchase in the absence of perceived shopping enjoyments. A pertinent example is the sale volumes change of fast moving consumer goods (FMCG) across UK airports. By observing and recording impulsive sales of FMCG in main UK airports, Crawford and Melewar (2003) discovered that there was a negative correlation between the impulsive purchase volumes and the traveller's Stress Curve (Scholvink, 2000). When travellers are exposed to increasing stresses before immigrations, they are becoming less aware of the commercial environments that surround them and avoid any unplanned purchase. Yet, a dramatic increase in impulsive sales can be observed since

such stress had been reduced and travellers perceived their rest times as "happy hour" after immigration and before security. This finding, on the one hand, suggests that consumers' varying emotion experience will determine their buying behaviours; on the other hand, it postulates that such relationship hinges on the overall process or combined emotions rather than any one of them.

3.4.3.2 Situational Loss in Self-Control

The second situational trait concerns self-control failure under chronic and situational settings. Previous literature have defined self-control in several aspects, but they generally refer to an individual's motivation and capacity to refrain from enacting a problematic desire or to override a problematic desire with a preferred behaviour (Hofmann and Kotabe, 2012). Studies have suggested that a loss in self-control may lead to a wide range of behavioural disorders, such as eating disorders or impulsive consumption (Gall et al., 2016; Baumeister, 2002). Yet, it may be important to note that self-control failure can occur in various forms (preventive vs. interventive) and could be attributed to different reasons, such as lack of standards, lack of monitoring or the inability to change (Verplanken and Sato, 2011; Caver and Scheier, 2012). Hence, its influence on behaviours can assume different forms.

Recently, Hofmann and Kotabe (2012) provided a Preventive-Interventive Model (PI-Model) of Self-control with a view to integrating previous concepts in self-control, which posits preventive strategies comprising of a collection of different means by which individual may proactively affect the parameters of interventive self-control. Whilst IB studies have pervasively acknowledged the role of self-control in governing consumption, only a few have distinguished them from different forms. Given that different forms of self-control may occur at different stages of a purchase, for example, proactive self-control occurs prior to making a purchase when interventive is resulted during a purchase, the trait of self-control differs as a compound trait or a situational trait. Based on the concepts provided by Hofmann and Kotabe (2012), the table succinctly summarises the main forms of self-control failure in IB studies (Table 3.4.3.2).

Table 3.4.3.2 Forms of self-control failure in impulsive purchase				
Forms of Self Control Failure	<i>Preventive</i>	<i>Literatures</i>	<i>Interventive</i>	<i>Literature</i>
Related IB traits	Lack of Premeditation	Wood (1998); Hoch and Loewenstein (1991)	Lack of Standards	N/A
	Lack of Perseverance	Wang and colleagues (2017)	Lack of Self-monitor	Vohs and Faber (2007) Fedorikhin and Patrick (2010)
	Lack of Mental Resource	Baumeister (2002)	Lack of Capacity to Change	Baumeister (2002)

In general, early studies were mostly specific to the preventive form of IB self-control, describing a collection of individual differences to elucidate why consumers could be proactively susceptible to failure in regulating their buying decisions (Fujita and Roberts, 2010). Two sub-traits of impulsivity proposed by the UPPS model have been emphasised in this regard: 1) the Lack in Premeditation, and 2) the lack of perseverance. Whilst, on the one hand, lack in premeditation, which refers to individuals being short-sighted and hedonic seekers, would cause them to experience conflicts in shopping targets (Hoch and Loewenstein, 1991; Wood, 1998); on the other hand, lack of perseverance suggests that individuals may be unable to be aware of such conflicts as they may experience overloading in information processing and hence, are likely to give up their self-control when confronted with difficulties. Accordingly, studies have suggested that when making a choice, IB consumers are gravitated towards instant gratification rather than bigger but long-term achievements (Fenton-O'creevy et al., 2018) and may remove their focus on self-control

from the urge to buy impulsively (Tice et al., 2018). In addition, Vohs and Faber (2007) found that consumers are less able to inhibit irrelevant information loadings during their shopping trips as a result of which, they are unable to keep track of relevant behaviours (loss in self-monitoring). Consequently, customers tend to relinquish their self-control focus and have instant proclivity to instant rewards.

More recently, escalating interest has been evinced on the spent resource model of self-control, or the theory of self-control muscle, grounded on the seminal works conducted by Baumeister and colleagues (Vohs and Heatherton, 2000; Baumeister, 2002; Hagger et al., 2010). The spent resource model of self-control emphasises the role of capacity to changes in self-control, indicating that self-control failure is attributed to situational ego-depletion. As Baumeister (2002) suggested: *"performing any act of self-control seems to deplete some crucial resources within the self, and that resource is then no longer available to help the person on the subsequent self-control task. This state of reduced capacity for self-control is called 'Ego-Depletion'"*. In contrast to previous self-regulatory resource models, Baumeister and colleagues opine that self-control resource is contingent upon a general pool, including both affective and cognitive process, as opposed to being a dominated cognitive account as advised by Shiv and Fedorikhin (1999). Exercising one account will lead to the depletion of the other and consequently lead to deficiency in overall mental resources. For example, as observed by Fedorikhin and Patrick (2010), consumers distract both motivation and the perceived need for self-monitoring whilst simultaneously producing ego depletion when their mood states are elevated.

In general, Baumeister (2002) suggested that ego-depletion can function in two ways in the context of IB. The first one posits that consumers experiencing ego depletion are more likely to yield a shopping temptation, such as an urge to buy. Therefore, they are consequently engendered to an IB. Temptations are stronger and seem to be irresistible when consumers lack the ability to control themselves. For example, Vohs and Faber's (2007) experiment revealed that participants who typically have strong desires to buy impulsively were particularly affected by depletion of resources, thereby indicating that depletion of mental resources prompted affected participants to feel more tempted than

their non-manipulated counterparts. In turn, consumers are willing to spend more time and money in unanticipated shopping situations (Baumeister et al., 2008).

Secondly, IB ensues when consumers were unable to process self-control under states of ego-depletion. This is because self-control and decision making have an adverse impact on mental accounts. For example, Vohs and Faber (2007) suggest that when consumers are temporarily deprived of their self-regulatory resources, they tend to attach a higher value on goods; therefore, the point at which a product becomes prohibitively expensive also increases. Equipped by a simulated buying task (Feinberg, 1986), Vohs and Faber noticed that participants who were attention-seeking were willing to pay higher prices for a variety of products, as compared to those that were not deficit in attention. It is suggested that ego-depletion would curtail the ability to apply control strategies on impulse buying and would, therefore, lead to intentions of spending more money on purchase (Baumeister et al., 2008).

Yet, it is noteworthy that while cognitive exercise can lead to situational ego-depletion, it would enhance the overall capacity of self-regulating accounts in the long run (Muraven and Baumeister, 2000). According to the strength model, self-regulatory resources can be consumed as a result of closely sequenced acts of self-control in the short run; however, over the long run, self-control can also be strengthened through repeated self-control excises. To that end, a recent study by Sultan and colleagues (2012) suggests that feeling a strong urge to buy can be undermined by performing self-control exercise on a regular basis. They invited a total of 178 American students for a two-week-long experiment and randomly divided them into two subgroups: one was the control group that required participants to exercise either physically or take up cognitive works; is the other group was not required to do so. After a span of two weeks, when comparing to control groups, the group that did not exercise expressed a significantly higher desire to purchase. Thus, it is suggested that those who frequently exercise their cognitive works are less likely to make consumptions impulsively.

3.4.4 Surface Traits

Drawing on classic theories in reasoned acts, such as the theory of planned behaviours (TPB, Ajzen, 2011), a mediation model of behaviour was suggested where behavioural intentions are substantial mediators between consumers' internal control, such as their buying attitudes or belief, and actual behaviours. A couple of meta-analysis of TPB models further confirms that behavioural intentions signify the strongest predictor of subsequent behaviours than other situational factors, such as chronic evaluations or attitudes towards consumption. To distinguish the behavioural intentions from other situational variables and to raise this issue of particular behaviours, the 3M model conceptualised behavioural intentions such as surface traits. On the one hand, the surface trait mediates influences from other level traits and cultural influences; on the other hand, it is the only trait that reflects behavioural tendency towards a specified behavioural manner and directly corresponds to actions.

Yet, impulse buying usually belies the rationale behind a behavioural intention. As suggested by Rook (1987), IBs are usually made in a quick and unreflective manner; thus, consumers invariably act without any planning or forethought. Therefore, behavioural intentions usually do not exhibit during an IB (Rook, 1987). While evidence suggests that some individuals are more inclined to make an IB than the other, thus indicating various degrees of tendencies towards IB among consumers, scholars have applied different items to define consumer's overall tendencies to IB, such as buying impulsiveness, the felt urge to buy, or the Impulse buying Tendency (IBT). In turn, diversified understanding can be noticed on consumer's overall IB tendencies.

The Buying Impulsiveness

In the seminal work conducted by Rook and Fisher (1995), consumers were found to only engage with buying impulsively when they believed that the purchase can be normatively accepted. Yet, the fact remains that such a relationship is moderated by their buying impulsiveness. Consumers who got higher scores in buying impulsiveness were found more likely to pass the normative evaluations as compared to others. Thus, the study suggests that buying impulsiveness may indicate a consumer's overall tendency to make

an IB. Correspondingly, subsequent studies by Rook and colleagues (Weun and colleagues, 1998; Beatty and Ferrell, 1998) constructed IBT scales based on the buying impulsiveness, which has been one of the most widely used scales in contemporary IB research.

The buying impulsiveness scales have been constructed with a focus on cognitive aspects of IB, that emphasizing IB is made spontaneously, unreflectively, immediately and kinetically (Rook and Fisher, 1995). The table at right (Table 3.4.4) provides a list of items that are used in the buying impulsiveness scale.

Table 3.4.4 Buying Impulsiveness Scale; Adapted from Rook and Fisher (1995)

Item	Factor loading	Mean	SD
1. I often buy things spontaneously.	0.81	3.08	1.18
2. "Just do it" describes the way I buy things.	0.75	2.65	1.17
3. I often buy things without thinking.	0.73	2.33	1.19
4. "I see it, I buy it" describes me.	0.71	2.26	1.15
5. "Buy now, think about it later" describes me.	0.65	2.25	1.20
6. Sometimes I feel like buying things on the spur-of-the-moment.	0.64	3.40	1.04
7. I buy things according to how I feel at the moment.	0.63	3.17	1.19
8. I carefully plan most of my purchase.	0.62	2.81	1.16
9. Sometimes I am a bit reckless about what I buy.	0.60	2.99	1.08

It was initially developed by carrying out an exploratory research on the phenomenology of consumer's impulse buying episodes (Rook, 1987). Rook and Fisher (1995) later ran a factor analysis on the episodes by including the impulsiveness scales proposed by Eysenck and colleagues (1985). Thereafter, IBT was developed as a sub-trait under the general impulsivity, describing consumers' tendency to buy swiftly and impulsively to a given stimulus, without deliberation and evaluation of consequences. Recently, a meta-analysis of 172 published IB literature suggested that IBT, which is measured by buying impulsiveness, has one of the biggest effective sizes ($r=0.32$) over other issues (Amos, et al., 2014). The results further indicated the success of buying impulsiveness in predicting

actual IB behaviours.

The Buying Impulse

While studies are widely used for buying impulsiveness as the basis of the IBT scales, they seldom noticed that such measurements do not distinguish between the buying action and the urge. Thus, it stands for both the tendencies to 1) experience spontaneous and sudden urges to make a purchase; and 2) to act on these felt urges with little deliberations or evaluation of consequence (Rook and Fisher, 1995). Hence, studies, such as Beatty and Ferrell (1998) and, most recently, Mohan and colleague (2013), found that the impacts from buying impulsiveness on actual IB are fully mediated by *felt urge to buy*, giving the paths that from buying impulsiveness and actual IB were insignificant. This mediation effect draws several concerns on the component of IBT in recent, suggesting urge to buy accounts for an important part of the IBT (Verplanken and Herabadi, 2001; Badgaiyan and Verman, 2016).

However, there is also a wealth of study that debates such a view. For example, Hoch and Loewenstein (1991) argued that consumers can actually deflect the urge to buy by executing various desire and will power-based strategies. Experiencing the urge to buy thus, cannot sufficiently predict subsequent buying behaviours. Especially, studies indicate that urge only predicts when consumers unable to refuse such urge, for example under ego-depletion (Baumeister, 2002), indicating the involvements of buying impulsiveness (Verhagen and van Dolen, 2011; Huang, 2016).

Unidimensional IBT

More recently, studies have tended to agree with a unidimensional view on IBT, comprising of the affective aspects of IBT functioned by the urge to buy as well as the cognitive aspects of IBT that are functioned by the buying impulsiveness. For example, Verplanken and Herabadi (2001) had developed and validated a 20-item IBT scales with the inclusion both aspects of IBT, suggesting that both the buying impulsiveness and buying impulse are substantial and necessary as IBT components. Recently, the unidimensional view of IBT has been manifested by a plethora of studies, such as Lin and Lin (2013), Mohan and colleagues (2013), Badgaiyan and Verman, 2014, Bellini and colleagues (2017), and

Parsad and colleagues (2017).

In addition, the unidimensional view is also consistent with genetic findings of IB behaviour. For example, a genetic study about drug-abusing based 30-sibling pairs suggested that the trait of impulsivity has two components: when impulsiveness is a behavioural endophenotype that mediates the external stimulus of drugs, the sensation-seeking is more likely to be an effect of stimulant drug abuse (Karen et al., 2010). Similar, fMRI studies on buying behaviour lend further credence to this view. According to Hubert and colleagues (2013), higher loading in buying impulsiveness would lead to stronger activity changes in brain regions (e.g., the Ventral Striatum; VMPFC; DLPFC) that, in turn, result in stronger buying intentions. However, such changes can occur in different brain regions and reside in different information processing systems: attractive packages were found to activate regions associated with reward (affective processing), whereas unattractive packages activated regions associated with negative emotions (cognitive process). Therefore, the overall IBT tend to be based on both affective processing and cognitive process, thereby indicating that a unidimensional view for IBT is more appropriate.

3.4.5 Determine of Impulse buying tendency

In sum, drawing on the trait architecture in Mowen (2000), this section classified IB traits into four categories. Basically, the elemental traits reflect the genetic basis of traits and subjective to the early stage of learning history and cultural influence. Thus, it alters a wide range of lower-order IB traits and, in turn, consumer's impulsive purchases (Sun and Wu, 2011; Chan et al., 2017). Especially, it seems that not all proposed elemental traits in this research fields have significant impacts as disagreements have been found among studies (Sun et al., 2004; Badgaiyan et al., 2016). On the one hand, inconsistent may be caused by diversified understandings on IB concepts (Stern, 1962); thus, studies may use different measurements on IB (Hubert et al., 2013). On the other hand, this error can be caused by the variance in research designs, such as the sample size used in the study, the demographic factors of participants in the study and nature of the study (qualitative vs. quantitative). However, it must be noted that narrative reviews only have limited power to justify such inconsistent. Further empirical works, such as a meta-analysis, are expected

to help integrate these results.

In addition, some disagreements have also been found on the compound traits of impulsive purchase, inheriting from the debate between trait impulsivity and trait self-control (Battar, 1995; Kendall and Wilcox, 1979). It has been questioned whether the trait impulsivity is merely a sub-trait under the trait of self-control or whether it is an independent but highly correlated trait to self-control. Such debate continues to exist today despite the divergence; both the traits have exhibited great implications on impulsive purchase (Rook, 1987; Kacen and Lee, 2008; Vohs and Faber, 2007; Vohs et al., 2018). In particular, this section favours the trait impulsivity as the compound trait because impacts from the trait self-control tend to be more salient under situational designs; thus, it can be better explained as situational traits. Recent studies under the mental capacity models of self-control have also supported such view (Baumeister, 2002). Thus, several paradigms of trait impulsivity have been visited with a particular focus on the UPPS model, which offers both an affective and a cognitive account (Whiteside and Lynam, 2001). Alongside dimensions of the UPPS model, IB consumers were found to be more prone to immediate enjoyments than delayed but bigger rewards, which is suggestive of their unreflectiveness to buying consequence and subjectivity to hedonic market communications (Wood, 1988; Rook and Hock, 1985). In addition, the UPPS model also indicates the implication of self-control to impulsive purchase (Hoch and Loewenstein, 1991). For example, low scored individual in premeditations is found more easily to relinquish their self-control targets (Schmidt et al., 2017). Similarly, a low score in perseverance may indicate that the individual is less able to avoid irrelevant thoughts and as a result, is more likely to suffer ego-depletion, which then encourages impulsive purchase (Bechara and Van der Linden, 2005).

Besides, situational traits stand for the P-E transactions for impulsive purchase. Person and Environment transactions have long been the central area of focus for consumer studies as, on the one hand, it is closer to the practice set of a decision making in marketing place; on the other hand, it usually offers a stronger predicting power on behaviours than other levels of traits, such as elemental traits and compound traits. However, such transactions are complex because decision making involves factors from multi-aspects. In

order to help present a clear view of person and situation exchanges occurring when consumers make an impulsive purchase, the follow 2X3 matrix is built based on a dual processing view of personality.

Table 3.4.5 Situational buying traits and dual processing

	IB Emotion		Self-Control
	Negative Emotion	Positive Emotion	Self-Control Failure
Affective Process	✓ Therapeutic gift-giving	✓ Reward gift-giving	✓ Ego-depletion
Cognitive Process	✓ Self-completion		✓ Ego-depletion
	✓ Cognitively deconstructed mindset	✓ Lack of Self Efficiency	✓ Lack of standards
			✓ Lack of Self-Monitoring

In general, both IB emotion and consumer's self-control are known to play important roles as far as IB is concerned. Drawing on the affective processing, the emotion felt by consumers when making a purchase upon a purchase context will highlight emotional gains and then cause them to be more inclined to buy. Notably, a positive emotion may encourage purchase for reward or indulgence purchase (Rook and Fisher, 1995; Heath et al., 2011) whereas negative emotions evoke bad feelings (Lucas and Koff, 2017). Besides, both types of shopping emotion may result in deficient in cognitive resources, which explains why the cognitive process is limited during an IB (Fedorikhin and Patrick, 2010; Donnelly et al., 2016).

In the case of self-control failures, they can advance IB in many forms (Hoch and Loewenstein, 1991; Hofmann and Kotabe, 2012) but would mainly be in the form of ego-depletion under a situational shopping design (Baumeister, 2002; Vhos and Faber, 2007).

It is held that purchase decision making is taking a toll on mental account; thus consumers would be unable to process self-control when they are temporarily robbed of self-regulatory resources. Yet, from a long-run view, impacts from ego-depletion can be impaired by cognitive exercises (Sultan et al., 2012).

The final level of IB traits suggested by the 3M model is that of surface traits, which represent the behaviour tendencies of making purchase impulsively. In general, studies have suggested three types of measurements on IBT. The first one, which is also the most widely used one, is derived from the impulsiveness scales (Eysenck, et al., 1985) by Rook and Fisher (1995) and mainly measures a cognitive aspect of IBT. In addition, several studies have also tried to use consumer urge to buy as the surface traits of IB, thereby suggesting that the urge is a necessary mediator for the buying act. Yet, recent studies tend to reach a consensus on both measurements - buying impulsiveness and the urge to buy; therefore, they should be used collectively rather than separately (Verplanken and Herabadi, 2001). In this case, a unidimensional view on the surface traits of IB has elicited a great deal of interest of IB research. Such a viewpoint is also consistent with the previous dual-processing accounts of IB decision making (Weinberg and Gottwald, 1982; Coley, 2003) and has been widely confirmed (Badgaiyan and Verma, 2016; Lucas and Koff, 2017). Yet, given that the affective aspects and cognitive aspects are known to reside in different neuro-underpinnings (Hubert et al., 2013), a question has been raised about why they are not equally important to IB since the decision-making is more dominated by the affective process than the cognitive process. Yet, such concerns are still left for further investigations. Impulse buying or impulse buying tendencies tend to be functioned by a wide range of traits. These traits reside at different level of trait hierarchies and might have different effects on consumer's buying tendencies. To know their average effects and improve the precision of knowledge about impulse buying, this thesis conducts a meta-analysis.

Especially, in line with Mowen (2000) and Sun and colleagues (2004), this meta-analysis comprise two sub-analysis. The first meta-analysis tests the effects from trait predictors on the impulse buying tendencies. It includes effects from three lower level of traits, namely the elemental level, compound level, situational level, on the surface level trait, the overall

impulse buying tendencies. Thus, at this part, the dependent variable of the meta-analysis is the impulse buying tendency. Thereafter, the meta-analysis tests how well that the impulse buying tendency, including both its cognitive aspect and affective aspect, in predicting actual impulse buying. Thus, at this part, the dependent variable for the meta-analysis is consumer's actual impulse buying behaviour. In addition, moderation analysis will be conducted on the identified effects. Both samples characters (age, gender, power distance) and methodology issues (Measurement of IBT) are tested as potential moderators. Table 3.5.1 provides a summary of predicted relationships.

Table 3.5.1 Expected relationships with Impulse buying

Variables	Expected Relationships	Direction	Representative Studies
<i>Elemental Level:</i>			
<i>Openness to Environments</i>	Individuals that are curious about shopping environment are more likely to buy impulsively	±	Brakto et al. (2013); Badgaiyan and Verma (2014)
<i>Conscientiousness</i>	Consumers that are well organised and methodical are less likely to buy impulsively	-	Chen (2011); Donnelly et al. (2012)
<i>Extraversion</i>	Extraversion positively predicts impulse buying tendency	+	Dittmar et al. 1995; Bosnjak et al. (2007)
<i>Agreeableness</i>	There is a negative relationship between Agreeableness and consumer's impulse buying tendency	±	Verplanken and Herabadi, (2001); Sun and Wu, (2011)
<i>Neuroticism</i>	High score in Neuroticism indicates an individual is prone to buy impulsively	+	Rook (1985); Hoch and Loewenstein (1991)
<i>Materialism</i>	Consumers who attach value to material objects are more likely to buy impulsively	+	Dittmar and Bond (2010); Wu (2006)
<i>Arousal</i>	High level of arousal can predict impulse buying tendency positively	+	Weinberg and Gottwald (1982); Kacen and Lee (2002)

<i>Compound Level:</i>			
<i>Impulsiveness</i>	Impulsive individuals are more likely buying impulsively	+	Weun et al. (1998); Huang (2016)
<i>Sensation-Seeking</i>	Individuals with higher desire to seek novel experiences are more likely to engage in impulse buying	+	Olsen et al. (2016); Fenton-O'Creevy et al., (2018)
<i>Situational Level:</i>			
<i>Shopping enjoyments</i>	Individuals experience hedonic shopping values are more likely to buy impulsively	+	Lee and Yi (2008); Thompson and Prendergast (2015);
<i>Loss in Self-Control</i>	Individuals who are less able to regulate their behaviours are more likely to buy impulsively	+	Youn and Faber (2000); Vohs and Faber (2007)
<i>Surface Level:</i>			
<i>Aspects of Impulse Buying Tendency</i>	Cognitive aspects and affective aspects of IBT represents unique neuro-underpinnings related to actual impulse buying	+	Verplanen and Herabadi (2001)
<i>Impulse Buying Tendency</i>	Individuals that are more likely to buy impulsively are more likely to make actual impulse purchases	+	Beatty and Ferrell (1998); Badgaiyan and Verma (2014)
<i>Moderators</i>			

<i>Gender</i>	Females and males have different motivations for impulse buying	±	Dittmar et al. (1995)
<i>Power Distance</i>	Level of accepting and expecting power disparity	+	Zhang et al. (2010)
<i>Age</i>	Age negatively influences traits effects on impulse buying tendency	-	Thompson and Prendergast (2015)

3.5 Method

3.5.1 Literature Research

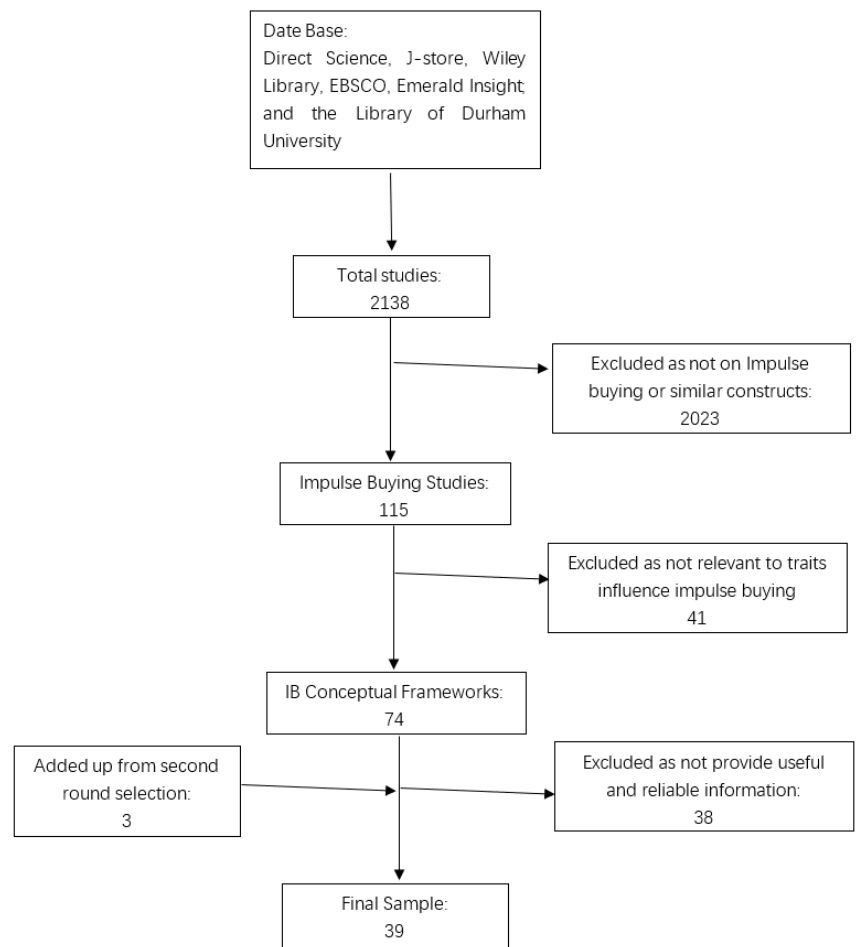
An electronic search is conducted on six databases comprising: Direct Science, J-store, Wiley Library, EBSCO, Emerald Insight as well as the Library of Durham University. Research strategies include Impulse (Impulsive) buying; Impulse buying tendency; Buying urges; online impulse buying, shopping enjoyments; impulsivity; impulsiveness; hedonic motivation; ego-depletion; ". Peer-reviewed studies that have been published between 1948 to 2018 are reviewed. Written languages are limited within English. Research subjects include business, management, marketing, economics, sociology, psychology and clinical and medical.

3.5.2 Study Selection

Several inclusive criteria are used to distil the meta-analysis sample from the literature research. Articles are included when they contain 1) a measure of at least one of the traits related to impulse buying or impulse buying tendency; 2) a measure of impulse buying or impulse buying tendency; 3) useful and reliable information for meta-analysis. A study provides useful and reliable information when it reports details of samples (size, age, income, gender) and observed effects in terms of Pearson product (coefficient) or items can be transferred into Pearson product (t-values) as well as the measurements of these

effects; And a cutoff value for the measurement reliability is 0.75, studies reported lower reliability values of their measurements are excluded in the meta-analysis. In addition, rare events are also dropped. Effects are tested when there are three or more than three studies unless combining two studies may lead to a sample more than 10,000. Figure 3.5.2 shows the flowchart of the study selection process. In brief, primary literature research leads to more than 2000+ articles but 1217 are clearly noticed as not relevant to the subject of this research. Of the rest 207 studies about IB, 95 are found not relevant to trait studies thus left a sample of 112 studies. Yet, given 76 of these 112 studies are not able to provide sufficient, useful and reliable information for meta-analysis, 36 studies are targeted for the meta-analysis. Whereas a second-round study selection notice three studies are missed in the first round, the final sample size for the meta-analysis 39 studies.

Figure 3.5.2 Flowchart of Study Selection Process (for Meta-analysis)



For the confirmed 39 papers, all studies are based on self-reported data in terms of survey and relied on cross-sectional designs. A total number of 119 effects have been observed and included in the analysis. Each of the effects is assigned to an independent sample. Thus, an overall of 61,654 respondents (Mean= 518) is noticed for the 47 independent samples comprising of both female and male students along with non-student participants. Most of the included studies were published in the twenty-first century, with the exception of Beatty and Ferrell (1998). Given this meta-analysis and a particular emphasis on a niche field in the marketing study, the impulse buying traits, such as sample size is fairly adequate for estimating the average effect sizes of IB traits.

Thereafter, each effect sizes are coded in line with the 3M model (Mowen, 2000). For elemental level traits, this thesis replicates the coding from Mowen (2000) and Sun and Wu (2011). A total of seven constructs are coded which comprises of Five constructs from the BFM and the other two are Materialism and Arousal. For the second level, compound level traits, which are compound by the elemental traits, are coded as Impulsivity. Yet, as it has been previously noticed, impulsivity has multidimensionality. Especially, recent meta-analysis about impulsivity suggests there exist at least two dimensions of impulsivity (Duckworth and Kern, 2011; Coskunpinar et al., 2013; Hershberge et al., 2017). In line with Duckworth and Kern (2017), this thesis further coded impulsivity into two aspects as the impulsiveness and the sensation-seeking. For the third level, situational level traits, this thesis emphasis two situational determinants of IB or IBT: Shopping enjoyments and Loss in self-control. Such coding, on the one hand, because these two constructs are popular in IB studies thus there are enough samples for meta-analysis; on the other hand, it is because these two constructs represent two different assumptions on IB determinants. While studies about shopping enjoyments mainly concern IB is triggered by emotions thus is not both with the self-control system, the others suggest shopping enjoyments can influence IB because it reduces the cognitive resources of self-control such that consumers are less able to control themselves from buying urges. Thus, these two constructs were coded to compare their effects on IBT. If the two engages one after the other, according to

the trait hierarchy model, they may have different extents on IBT as one of them is closer to behaviours than the other. Finally, the surface level trait is coded as impulse buying tendency in line with Verplanen and Herabadi (2001). Table 3.5.3 presents constructs used in the meta-analysis.

Table 3.5.3 Description of constructs in the meta-analysis

Table 3.5.3 Description of constructions in the meta-analysis

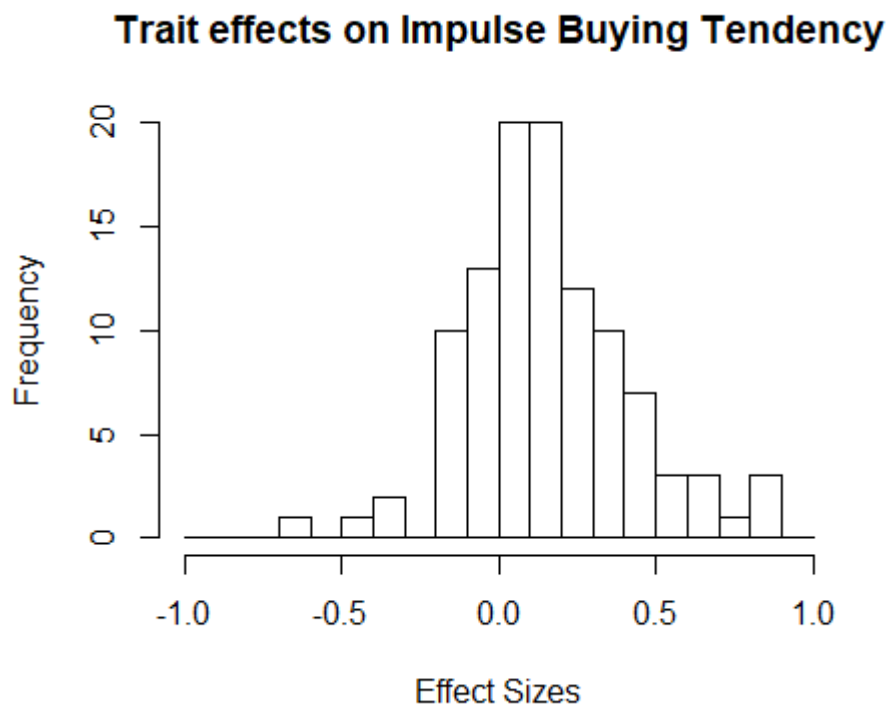
Determinant	Description	Aliases	Representative Studies	Example Operationalization
<i>Elemental Level</i>				
Big Five Model	A general pool of all types of measures of Big Five personalities (Wilt and Revelle, 2015)	1) Openness to Environments: 2) Conscientiousness: 3) Extraversion: 4) Agreeableness: and 5) Neuroticism/Emotion Instability	Verplanken and Herabadi (2001); Sun et al. (2004); Thompson and Prendergast (2015)	40-item Lexical Big-Five Measure (Saucier, 1994); NEO Inventory (McCrae and Costa, 1985)
Materialism	Describing consumers who attach value to material objects and find meaning and identity in possessions (Dittmar and Bond, 2010)	Materialism: Need for Material	Bosnjak et al. (2007); Chen and Lee (2015)	Seven-point Likert scales by Richins and Dawson (1992), such as: "It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like"; "I usually buy only the things I need"
Arousal	Standing for a responsive or unresponsive organism rather than responsive or unresponsive segments of behaviour...referring to dimension of reported subjective feeling (Duffy, 1957)	Level of Arousal: Need for Arousal	Xu (2007); Sharma et al. (2010)	Open ended question such as: "Which were your considerations to buy this product"; "What did you feel before, during and after you purchased this product" (Herabadi and Verplanken, 2009)
<i>Compound Level</i>				
Impulsiveness	A predisposition toward rapid, unplanned reactions to internal or external stimuli with diminished	Lack of premeditation: Lack of Perseverance: Unplanned	Hausman (2000); Huang (2016)	34-item Barratt Impulsiveness Scales Version 10 (BIS-10), such as: "I am restless at the theatre or lecture"; "I

	regards to the negative consequence of these reactions to the impulsive individual or others (Brewer and Potenza, 2008)			am a careful thinker." (Patton et al., 1995)
Sensation-Seeking	1) A tendency to enjoy and pursue activities that are exciting: 2) An openness to try new experience that maybe dangerous (Duckworth and Kern, 2011)	Sensation-seeking; Rewards-seeking; Variety-Seeking	Sharma et al. (2010); Olsen et al. (2016)	Seven items Seven-point Likert scales of Change-Seeking Index (Steenkamp and Baumgartner, 1995), such as: "I like to experience novelty and change in my daily routine."; "I am continually seeking new ideas and experiences."
<i>Situational Level</i>				
Shopping Enjoyments	The pleasure one obtains in the shopping process (Beatty and Ferrell, 1988)	Shopping enjoyments; hedonic desires; positive emotions:	Beatty and Ferrell (1998)	Six factor scale of hedonic shopping motivation profiles, such as: "I like shopping for others because when they feel good I feel good."; "To me, shopping is a way to relieve stress."
Loss in Self-Control	An individual's motivation and capacity to refrain from enacting a problematic desire or to override a problematic desire with a preferred behaviour (Hofmann and Kotabe, 2012)	Lack of standards; Lack of goals; Ego-depletion; Lack of Self-monitor; Lack of Self-efficiency;	Baumeister (2002); Vohs and Faber (2007)	Experiments to reduce cognitive resources of participants, such as: "the participants were asked to watch a 6 minute videotape, without audio, of a woman being interviewed under the guise that they would make personality judgments about the interviewee later." (Vohs and Faber, 2007)

<i>Surface Level</i>				
Impulse Buying Tendency	Consumer's overall tendency to buy impulsively: comprising cognitive impulse buying tendency and affective impulse buying tendency (Verplanken and Herabadi, 2001)	Cognitive impulse buying tendency: Affective impulse buying tendency: Buying Impulsiveness: Buying impulse: Urge to buy:	Verplanken and Herabadi (2001): Jones et al (2003)	20item scale to measure general impulse buying tendency, such as: "I often buy things spontaneously"; "I often buy things without thinking." (Verplanken and Herabadi, 2001)
<i>Actual Behaviour</i>				
Impulse Buying Behaviour	an unplanned and sudden buying act; in response to subjective or external stimuli, accompanied by a powerful and persistent urge; after the purchase, the customer experiences emotional, cognitive and/or behaviour reactions, which may become the new trigger of repeated IB; a reflection of impulsivity/traits, sociocultural values and buying beliefs; both a process and an outcome (Xiao and Nicholson, 1995)	Self-reported frequency of impulse buying; Observed actual impulse buying behaviour	Mohan et al (2013): Lucas and Koff (2014)	Two items measurements, such as: "Total number of items bought on impulse"; "Proportion of items bought on impulse" (Mohan et al., 2013)

For each of the above constructs, their observed effect sizes are converted into coefficient correlations. The formula used for such convert is adapted from Hall and Rosenthal (1995), which has been extensively used in other studies (Roter et al., 2002; Maniglio, 2009). Thereafter, these effect sizes are corrected on the basis of reliability and sampling variances. The sample variance is computed by the mean effect size based on the advice from Aguinis (2001). Comparing to using individual estimates, the mean estimation is believed to provide a less negative biased estimation of sampling variance. In addition, the overall coding process follows the model proposed by Uttley and Montgomery (2017). This process ensures that the outcome is double-checked by two independent coding processes, with a time lag of one month, thereby reducing the chances of coding errors. No time difference can be observed between the results of the two coding processes. Figure 3.5.4 and Figure 3.5.5 show the distributions of the effect size.

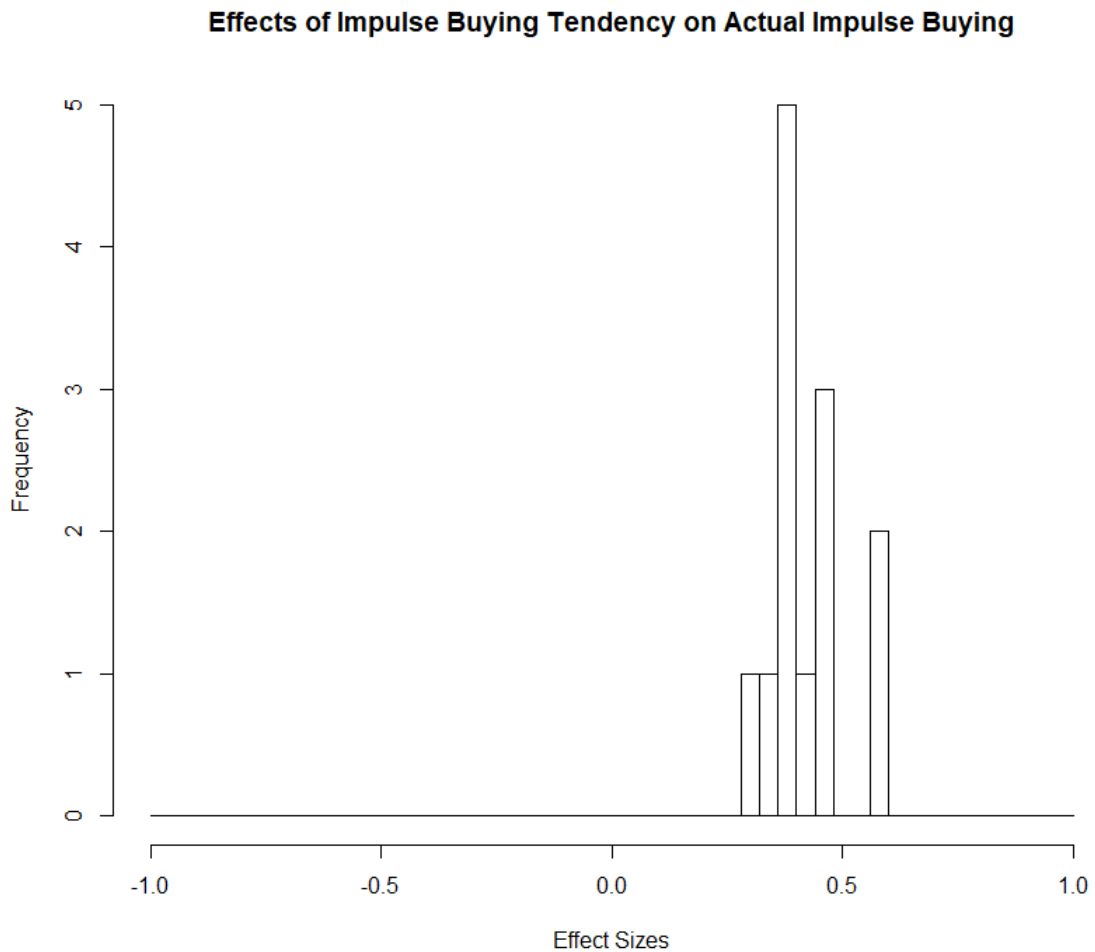
Figure 3.5.4 Distributions of traits effects on Impulse buying tendency



In sum, a total of 107 effects from 39 primary studies have been included in the meta-analysis. These effect sizes range from -0.65 to 0.88 (Badgaiyan et al., 2016). The median effect size is 0.16 whereas the mean of effect size is 0.19. The standard deviation is 0.26. Most of the estimations converge to -0.2 to 0.5, accounting for 87 of the 107 overall effects. More positive effects have been estimated as compared to their negative counterparts. Thereby the distribution charts reinforcing the fact that the variances among estimations are indeed complex.

Similarly, Figure 3.5.5 provides the distributions of effect sizes of Impulse buying tendency on Actual Impulse buying.

Figure 3.5.5 Effects of Impulse buying tendency on actual impulse buying.



In general, a total of 13 effects from 12 primary studies have been included in the meta-analysis. These effect sizes range from 0.31 (Badgaiyan and Verma, 2014) to 0.57 (Badgaiyan et al., 2016). The median effect size is 0.16 whereas the mean of effect size is 0.42. The standard deviation is 0.08. Most of the estimations converge to 0.3 to 0.4, accounting for 7 of the 13 overall effects. All observed effect sizes are positive.

3.5.3 Integration of effect sizes

Introduction of Meta-analysis

In essence, a meta-analysis refers to one statistical method for quantitatively combining study results on similar subjects and overcoming much of the equivocation among research findings. Given that it allows the user to quantitatively integrate a few or several studies, researchers may arrive at conclusions that are more accurate and more credible and can be presented in one primary studies or in a non-quantitative narrative review (Hunter and Schmidt, 1990; Rosenthal and DiMatteo, 2001).

The approach of meta-analysis was initially developed to help remediate medical problems. For example, the seminal work by Pearson (1904) collected correlation coefficients to determine the extent to which inoculation against smallpox was related to survival. This method was later replicated into biomedicine and behavioural sciences as well, or the interface of the two, in the latter part of the twentieth century. Only until recently, meta-analysis has triggered a pervasive interest in managerial science for its apparent advantages in synergizing empirical findings than narrative reviews can offer. As suggested by Hall and Rosenthal (1995), there has been a shift in perspective in the recent past in that a broader and more objective view of research has emerged and the “landscape” or distribution of results has elicited greater interest than the results of individual studies. Especially, contemporary studies tend to integrate the framework of structural equation modelling into meta-analysis so that the meta-analysis could provide effect size after controlling for other variables in the model and making the best use of all available data

(Cheung and Chan, 2005; Aldao, et al., 2010; Bergh, et al., 2016). Over the past centuries, meta-analysis has been widely published in the fields of management and marketing. However, only one meta-analysis can be observed in the context of IB (Amos et al., 2014). Whilst their work was mainly concerned with situational variables of IB, this meta-analysis is conducted with a focus on impulsive traits. There are several types of software, such as SPSS, Excel, CMA and R program, which allow for quick processing of Meta-results.

The statistics in meta-analysis is very straightforward and can be computed easily through a manual process (Higgins and Thompson, 2002). Yet, it may take time and require meticulous investigation to define a proper strategy for meta-analysis. This is because meta-analysis can assume several forms, such as a univariate meta-analysis or a multivariate meta-analysis (Cheung, 2015), and occur via different models, such as the fixed-effect model, the random effect model as well as the mixed effect model which comprises of moderation effects (Damanpour, 1991). A different form or model requires the use of unique statistic, which, in turn, may lead to inaccurate estimations if a proper selection is not ensured (Cheung and Chan, 2005). For example, the DerSimoian and Larid method may not be used when the number of studies is small as it may be unable to reflect the errors associated with parameter estimation in an adequate manner (Brokwell and Gordon, 2001). Similarly, Hall and Rosenthal (1995) suggested that there is no single correct way to perform a meta-analysis, but a well-designed meta-analysis strategy should reveal its consideration on several key meta-concepts. For this reason, the following sections introduce the fundamental elements of a meta-analysis and how they can be defined in integrating effect sizes.

One of the many advantages of performing a meta-analysis over a narrative review is that effect sizes in individual studies can be explicitly calculated and synthesized in a meta-analysis. In this regard, effect sizes serve as the ingredients for the analysis and hence, must be well defined. There are a couple of definitions of effect size, but it is essentially a quantitative measure of the magnitude of some phenomenon used for the purpose of addressing a question of interest (Kelly and Preacher, 2012).

Generally, effect size can be of two forms: the "r" family and the "d" family. The "r" family includes several types of "r" related quantities, comprising of the Pearson r (when both variables are continuous), phi (when both variables are dichotomous), point biserial r (when one variable is continuous, and one is dichotomous), and rho (when both variables are in ranked form), as well as Z , the Fisher transformation of r . In contrast, the "d" family of effect size is constituted by Cohen's d , Hedges' g and Glass's delta. All "d" family members compare the difference between two means. The square root of the pooled variance of both groups is used as the denominator in d ; the square root of the pooled variance is used in g , whereas the denominator of delta is the square root of the control group variance only. There are also several methods that allow a transfer between "r" and "d". Hall and Rosenthal (1995) provide a list of these formulas.

Especially, using "r" family provides several statistic advantages for meta-analysis over the use of "d" family. For instance, as explained by Rosenthal and DiMatteo (2010), it makes more sense to convert "d" to "r" than to convert "r" to "d". This is because most members of "r" family, like Pearson r , are continuous and delineate the relationship between two levels of the independent variable and scores on the dependent variable. Yet, converting the continuous Pearson r to the dichotomous d may cause the loss of such information. Besides, "r" also allows for the analysis of trends across more than two groups, while "d" is limited to two. Moreover, "r" is also simpler and more straightforward to interpret in terms of practical importance as compared to "d".

It is also noteworthy that while most of modern research try to summary effect sizes through "p" values, the meta-analysis emphasises the value of effect size per se over the p-values as it may lead to biased conclusions. Basically, the importance depends on two variables, the effect size, which may be the "r" family or the "d" family, as well as the study size, which refers to the sample size of research. Hence, p-value as indicators of significant importance can be significant simply because of the increasing size of the sample. Consequently, even small effects, such as a zero coefficient, might become significant. Accordingly, when a meta-analysis combines several studies, it is advanced by statistic powers at the same time as the sample size becomes bigger. A focus on significance may, therefore, provide

misleading information. Thus, in order to prevent the reliance on p-values, meta-analysis generally focuses on effect size instead (Hunter and Schmidt, 1990). It emphasises that the repeated results are seen in the same direction across several studies. In this case, even if only insignificant values were observed, they may indeed present a powerful piece of evidence as compared to a single significant result.

Models of Meta-analysis

In primary studies, the value of effect size can vary radically for several reasons. For example, they may vary due to the deployment of different research methods, different measurement scales and different samples, for example, a student sample vs. an adult sample. Their variance should be carefully dealt with in order to integrate these effect sizes.

To begin with, the source of variance should be identified as it may require different models of meta-analysis. Borenstein and colleagues (2010) suggested three types of variance sources. The first one is population variance, which is measured by the square of the standard deviation of scores in the population. The second is between studies variance, measured by the square of the standard deviation of true effects across studies. These two variances are properties of the distributions within and across populations and hence, do not depend upon the sample size. In contrast, the third source of variance, error variance, may depend on sample size, comprising of 1) within study variance, which is measured by the square of the standard error of estimation within a study; 2) overall study error variance, and 3) the meta-analysis error variance.

A meta-analysis may have to deal with one or a mix of the above source of variance; thus, it requires specific techniques or models in various situations. In general, when there is only one true effect size that underlies all primary studies, a fixed model of meta-analysis can be used. Under a fixed model, the variance is completely resulted by sampling errors and the samples between studies are assumed to be indifferent. Thus, there is only one common effect among primary studies. In order to compute the common effect size, the sample size is not taken into consideration. However, the fixed model is rarely the case in

practices as studies are often equipped with different theories and psychometrics in different samples, thereby causing the sources of variance to become complex. In this case, a random model may be applied to the meta-analysis. In contrast to the fixed model, the random model supposes that the effect size varies from study to study; thus more than one true effect sizes are used in these studies. In this case, the random model computes the mean of an array of true effects rather than one single common effect size. Therefore, it takes the sample size of each primary studies into consideration. Intuitively, the variance of the combined effect size should be smaller under the fixed effect model than under the random-effects model because there is only one source of variance (sampling error) in the fixed model, whereas there are additional sources of variance (e.g. between-study variance) in the random model.

Forms of Meta-analysis

In addition, depending on the number of types of effect size that included in the analysis, meta-analysis can be classified as univariate form meta-analysis and multivariate form meta-analysis. When a multivariate meta-analysis is applied, it basically indicates that there are several factors at play and there is a possibility that these effect sizes are interdependent (Rosenthal and Rubin, 1986; Cooper et al., 2009). The dependence may source from both 1) over studies; for example, several studies may focus on similar subjects than the rest (Cooper, 2009), 2) Within studies, for example, the effect size may be computed based on a similar sample (Becker, 2000). Researches that used to overlook these dependencies were found to suffer from a risk of overestimating effect sizes, especially for random effect meta-analysis models (Stevens and Taylor, 2009; Hedges et al., 2010). Hence, meta-literature has offered three strategies to overcome this predicament. One is to avoid it through sub-group meta-analysis, which divides the entire sample into several sub-samples based on the dependence among effect sizes. Hence, in each sub-group, the impacts from effect dependence tend to be zero; thereafter, the meta-analysis can estimate the effect size and the heterogeneity variance for each sub-sample in a separate manner. However, this method reduces the sample size of the meta-analysis,

which betrays the advancement of meta-analysis. Thus, studies are encouraged to take dependence into concern rather than avoiding it (Cheung, 2014). One widely used strategy is the meta-analytic SEM, which pools a correlation/covariance matrix among included variables and used it into SEM analysis (Cheung and Chan, 2005; Byrne, 2016). In this case, the effect size of one variable is reported after controlling other variables. Yet, such method requires the data about the covariance among each included variables. As not all studies report the correlation or covariance matrix, a meta-analysis may not be able to use this method due to missing data, which in return leads poor model fit or the model cannot be identified. Alternatively, when it is not possible to know the dependence, Van den Noortgate and colleagues (2013) suggested a Three-level meta-analysis. Under the Three-level model modelling, the sampling variation for each effect size is at level 1, variation over outcomes within a study is at level 2, and variation over studies is at level 3 (Geeraert et al., 2004). Since the Three-level model treats the over-study variation, the dependence among effect size and the effect size can still be computed with the whole sample; this, in turn, is no impairment on statistical powers.

Heterogeneity Analysis

When studies tend to accept the variance among effect sizes, elucidating the variance becomes the primary task of the meta-analysis (Cheung, 2018). The common method to compute the level of variance is by estimating heterogeneity. Addressing statistical heterogeneity is always one of the most troublesome aspects of a meta-analysis since it might influence the conclusions of the meta-analysis (Higgins and Thompson, 2002).

In general, heterogeneity refers to the presence of variation in true effect sizes (such as risk ratio or correlation coefficient) underlying the different studies (Hardy and Thompson, 1998). The heterogeneity analysis help address the concerns of two sources of variance: 1) the variability within studies and; 2) the variability between studies. The first source refers to the sampling error caused by different samples that are used by every single study. The second signifies the true heterogeneity among the population effect sizes that are to be estimated by individual studies. Due to the influence of an indeterminate number of

characteristics that vary among the studies, such as those related to the characteristics of the samples, there is variation in the treatment and the quality of research design (Brockwell and Gordon, 2001; Field, 2003).

Notably, the meta-analysis offers several statistics for heterogeneity analysis. To begin with, in order to test the significance of heterogeneity, the Q statistic is usually computed (Cochran, 1954). Q statistic depends on sample size and can voluntarily become significant due to the presence of large samples, and vice versa. Hence, the significance of the Q statistic only suggests the significance of heterogeneity and should not be used to determine whether a fixed- or a random-effects model is used (Hall and Rosenthal, 1995; Cheung, 2018). Thereafter, an I^2 statistic would be computed to allow the meta-analysis to indicate the degree of heterogeneity. Especially, the I^2 interprets the proportion of the total variation of the effect size caused by the between-study heterogeneity. There are several ways of computing I^2 , such as Higgins and Thompson (2002) by the Q statistic (Higgins and Thompson, 2002) or by means of sampling variance (Takkouche et al., 1999; Xiong et al., 2010). In case a high-level heterogeneity is observed, it can be further investigated by several approaches. This includes the sensitive analysis, funnel plot or forest plots (Duval and Richard, 2000; Lohmueller et al., 2003). Moreover, meta-analytic SEM or Three-level meta-analysis can be applied based on the data set of meta-analysis (Konstantopouls, 2011; Cheung, 2014; Cheung, 2018).

The Present Meta-analysis

With the above pre-notice, this chapter favours two Three-level meta-analyses to validate the outcomes of the previous narrative review. The Three-level meta-analysis can take several varieties and their dependencies into consideration without losing statistic power. It concerns the within-study variance at level 1, the between-study at level 2 as well as the effect dependence at level three. Thus, it covers all sources of effect variance under a single model and avoids setbacks if sub-group analysis were used. Secondly, as data about covariance or correlation matrix is not available in the majority of IB studies, the effect dependence cannot be known. Thus, when the meta-analytic SEM model cannot be constructed, the Three-level model shows equal estimate validation on the effect size to

the SEM models and could also help explain the variance due to effect dependence (Van den Noortgate et al., 2013). Thus, two Three-level Meta-analysis is planned for this study in line with the Rosenthal and DiMatteo (2010). Especially, the first meta-analysis average effects from a wide range of traits on impulse buying tendencies and the second meta-analysis describe how well the impulse buying tendency predicts actual impulse buying. The *metaSEM* package based on an R program is used for computing the meta-results (Cheung, 2018). The package offers several advantages in performing meta-analysis (Polanin et al, 2017).

3.6 Results

Table 3.6.1 provides the statistic descriptive and averaged effect sizes of trait predictors on impulse buying and impulse buying tendency. According to Table 3.6.1, most of predicted effects in Table 5.5.2 are supported. Only one insignificant effect at $p < 0.1$ level is observed from trait agreeableness on IBT. All effects except the one from trait conscientiousness on IBT are positive.

Table 3.6.1 Descriptive statistics and correlations of predictors of impulse buying and impulse buying tendency

Determinants of Impulse Buying Tendency	Number of Effects	Total N	Average Effect Size	-95%CI	95%CI	I-Square	Q-statistic	p-value	Fail-safe N
Elemental Level									
Openness to environments	13	7898	0.04 [^]	-0.03	0.11	88%	93.9	0.00	22
Conscientiousness	14	8279	-0.14 [^]	-0.26	-0.01	97%	506.9	0.00	676
Extraversion	13	7898	0.2*	0.08	0.32	97%	429.9	0.00	1056
Agreeableness	13	7898	0.02	-0.03	0.07	77%	57.0	0.00	-
Neuroticism	15	8526	0.14*	0.05	0.22	93%	310.9	0.00	856
Materialism	6	2943	0.4*	0.20	0.59	96%	167.8	0.00	1048
Arousal	4	1191	0.23*	0.10	0.37	79%	16.4	0.00	71
Compound Level									
Impulsiveness	9	2784	0.36*	0.23	0.49	99%	1594.7	0.00	16808
Sensation Seeking	3	2232	0.12*	0.03	0.20	92%	38.7	0.00	101
Situational Level									
Shopping Enjoyments	11	4310	0.38*	0.24	0.52	99%	2075.0	0.00	30035
Loss in self-control	5	1623	0.46*	0.27	0.64	99%	1834.4	0.00	17229
Surface Level									
Cognitive Impulse Buying Tendency	8	3369	0.41*	0.34	0.49	98%	159.5	0.00	11845
Affective Impulse Buying Tendency	5	2703	0.46*	0.39	0.52	94%	105.4	0.00	6560

Significant level: * p<0.05; ^p<0.10. Note: The confidence intervals and the Fail-safe N are based on two-tailed tests.

Especially, the meta-analysis provides evidence that, in the elemental level, trait openness to environments, conscientiousness, extraversion, neuroticism, materialism and need for arousal significantly associated with consumer's impulse buying tendency. Notably, from Table 3.6.2 Moderation analysis of these correlations, these effects may be enhanced by certain moderators. At first, effects from trait agreeableness may be stronger if measured with a male sample rather than females. While the female is widely noticed as reporting higher agreeableness than the males, their impulse buying tendency may be less likely influenced by trait agreeableness (Weisberg et al., 2011). At the second place, IBT measurements also matter to elemental level traits. For instance, it may enhance the effects of neuroticism and agreeableness on IBT if the research measures affective aspect of IBT over cognitive aspect IBT. It is found to positively and significantly moderate the association between neuroticism and IBT ($r=0.32$, $p<0.001$). When measuring affective aspects of IBT, studies tend to make stronger estimations on such an effect than when measuring cognitive aspects. In particular, the moderation effects reduce the heterogeneity variance from 0.026 to 0.01, therefore explaining 58% of the overall between-study variance that investigated the connection between neuroticism and IBT. It is also found to have a significant but negative impact on the relationship between agreeableness and IBT. The results suggest that studies may tend to make weaker estimations on the effects when measuring the affective aspect of IBT, such as the urge to buy, as compared to measuring the cognitive aspects. The difference in IBT measurement reduces the heterogeneity variance from 0.0058 to 0.0033, thus accounting for 44% of the between-study variance in this subgroup.

At the compound level, both trait impulsiveness and trait sensation seeking are found to have significant and positive impact on consumer's impulse buying tendency, with averaged coefficients as 0.36 and 0.12 respectively. Five moderators are found. The first one is power distance, which has a positive and significant effect on the relationship between impulsiveness and IBT. Especially, with the inclusion of the power distance, the heterogeneity variance between studies reduced from 0.4 to 0.01, suggesting that 78% of these variances can be explained by the moderation effect. Participants from high power

distance countries may be more likely to buy impulsively than their counterparts from low power distance countries. In addition, the reported level of power distance reduces the effect of sensation seeking on IBT. The second moderator is the age of research participants. The results suggest elder participants may report smaller effects from sensation seeking on IBT. It may account for 63% of the between-study variance. The third moderator is the gender of participants. Males are more prone to sensation-seeking thus are more likely to make purchase impulsively than females. The heterogeneity variance reduces from 0.0056 to 0.0016, suggesting that 72% of the variance on effect size of sensation seeking on IBT can be explained by the genders of participants. In addition, whether participants from a college sample or not also enhance the effect from impulsiveness on IBT, which accounts for 41% of the between-study variance. A non-student sample may report a stronger effect size than a student sample. The last moderator is the IBT measurement. When the study measuring affective aspects of IBT, they tend to report stronger effect size from IBT on actual impulse buying. The difference in IBT measurements may explain up to 72% of the variance between studies.

It is also noteworthy that, according to the moderation analysis, effects from lower level traits tend to be more stable than higher level traits. Such as effects from the elemental level only be influenced by different measurements and are consistent among different cultural and genders. Yet, effects in compounded and situational level tend to be affected by several issues such as the age and gender of participants, the level of power distance and the year of publications. Such results is consistent to the 3M model (Mowen, 2000), which suggests that elemental traits is only subject to early stage learning and cultural issues while higher level traits tend to have stronger effects but may subject to a wide range of factors, such as the cultural, gender and even situational stimuli.

Table 3.6.2 Moderation analysis of correlations of predictors of impulsive buying and impulsive buying tendency

Observed Effects	Moderators													
	Publish Year		Age		Gender		Power Distance		Sample Size		Participants		IBT Measurements	
	Changes in Effect Size	R ²	Changes in Effect Size	R ²	Changes in Effect Size	R ²	Changes in Effect Size	R ²	Changes in Effect Size	R ²	Changes in Effect Size	R ²	Changes in Effect Size	R ²
<i>Elemental Level → IBT</i>														
Openness to environments	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conscientiousness	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extraversion	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Agreeableness	-	-	-	-	-	-	-	-	-	-	-	-	↑	0.44
Neuroticism	-	-	-	-	↑	0	-	-	-	-	-	-	↑	0.58
Materialism	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arousal	-	-	-	-	-	-	-	-	↑	0.79	-	-	-	-
<i>Compound Level → IBT</i>														
Impulsiveness	-	-	-	-	-	-	↑	0.78	-	-	↑	0.41	-	-
Sensation Seeking	-	-	↑	0.63	↑	0.72	↑	1	-	-	-	-	↑	0.72
<i>Situational Level → IBT</i>														
Shopping Enjoyments	-	-	-	-	↓	0.25	↓	0.54	-	-	-	-	-	-
Loss in self-control	-	-	-	-	-	-	↓	0.40	-	-	-	-	-	-
<i>Surface Level → Actual Impulse Buying</i>														
Cognitive Impulse Buying Tendency	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Affective Impulse Buying Tendency	-	-	-	-	-	-	↓	0.91	-	-	-	-	-	-

In addition, in line with Whiteside and colleagues (2011), the meta-analysis further noticed, however, the effects from compound level may merely come from the sub-trait impulsiveness rather than both impulsiveness and sensation-seeking. This is because the effect of sensation-seeking becomes insignificant once the dependence between it and impulsiveness is controlled. Figure 3.6.1 provides the result of the three-level meta-analysis of compound level effects. The ANOVA suggests the compound level effect is better estimated by impulsiveness rather than both the sensation-seeking and impulsiveness as the model is not significantly improved ($\Delta\chi^2(df=1)=3.64, p=0.06$). A three-level meta-analysis suggests after controlling the dependency between impulsiveness and sensation-seeking, the averaged effect size from impulsiveness on IBT is 0.28.

Figure 3.6.1 Three-level meta-analysis of compound level effects

Anova	$\Delta\chi^2(df=1)=3.64, p=0.06$		
Three-Level Meta-analysis	I2	r	CI
Level 1 Sampling error	0.1		
Level 2 Study	0.88		
Level 3 Categorical	0.11		
Overall Estimation		0.28**	(0.1,0.46)
Q statistic (df=11) =2292, p=0			
<i>N=Sample Size; r=estimated effect size; CI=95% confidence interval</i>			
<i>Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1</i>			

In addition, at the situational level, both effects from shopping enjoyments and loss in self-control are supported as predictors of consumer's impulse buying tendency at $p<0.1$ significant level. Their effect sizes is 0.38 and 0.46 respectively. In a similar way, the effect size is found moderated by cultural and gender factors. At first, there is a negative and significant moderation effect from power distance ($r=-0.61, SE=0.16, P=0.001$), thus suggesting that participants from countries with stronger power distance are more prone to marketing communications and thus, are more likely to make impulsive purchases. The power distance was found to reduce the heterogeneity variance from 0.052 to 0.027, which

resulted in an overall 48% variance in this sample. The second moderator is the gender of participants ($r=-0.25$, $SE=0.12$, $p=0.001$). Female consumers, unlike their male counterparts, are noticed to be sensitive to situational stimuli and therefore, make more impulsive purchases. Such results are consistent with those of the previous studies concerning gender difference on impulse buying (Dittmar et al., 1995; Coley, 2003; Tifferet and Herstein, 2012). At this point, it may be helpful to reiterate that an impulsive purchase refers to different decision-making components, such as affective or cognitive components, among male and female consumers. The gender difference was then found to reduce the heterogeneity variance from 0.05 to 0.04, thereby indicating that it explains 21% of overall between-study variance in this sample.

Yet, according to Figure 3.6.2, the subsequent ANOVA suggests that there is no difference between these two estimations and the one from the overall model ($\Delta\chi^2(df=1)=0.43$, $p=0.5$).

Figure 3.6.2 Three-level meta-analysis of situational level effects

Anova	$\Delta\chi^2(df=1)=0.43, p=0.5$		
Three-Level Meta-analysis	I2	r	CI
Level 1 Sampling error	0.1		
Level 2 Study	0.99		
Level 3 Categorical	0		
Overall Estimation		0.41**	(0.3,0.51)
Q statistic (df=15) =4819, p=0			
<i>N=Sample Size; r=estimated ecoefficiency; CI=95% confidence interval</i>			
<i>Signif. codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1</i>			

The categorical variables were found to account for 0% of the total variance. It was observed that more than 99% of the variance is between-study variance. Thus, the results suggest there is no difference between the effect size of shopping enjoyments and loss in self-control.

At the last level, surface level effects, both cognitive-IBT and affective-IBT are found significantly associated with actual impulse buying behaviours. Their effect size is 0.41 and 0.46 respectively. Yet, the p-values for the ANOVA are not significant at 0.1 level, thereby suggesting cognitive IBT and affective IBT are the same in terms of predicting power on

IB. The Three-level meta-analysis, Figure 3.6.3, further confirmed such a viewpoint.

Figure 3.6.3 Three-level meta-analysis of surface-level effects

Anova		$\Delta\chi^2(df=1)=1.37, p=0.24$	
Three-Level Meta-analysis	I ²	r	CI
Level 1 Sampling error	0.5		
Level 2 Study	0.95		
Level 3 Categorical	0		
Overall Estimation		0.43***	(0.37,0.48)
Q statistic (df=15) =4819, p=0			
<i>N=Sample Size; r=estimated ecoefficiency; CI=95% confidence interval</i>			
<i>Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1</i>			

The categorical variable was found to account for 0% of the overall variance in this sample. More than 95% variance is found between studies and the rest 5% is within-study variance. Only one moderator is found as power distance on the effect of affective impulse buying on actual impulse buying. Study participants report high power distance tend to report higher effect size on affective IBT scale on more frequent impulse purchase. It may explain over 91% of variance between studies.

3.7 Discussion

To sum up, this chapter conducts a meta-analysis to summarise effect sizes on trait predictors on consumer's impulse buying tendency and actual impulse buying. Especially, it provides evidence to support that consumer's impulse buying tendency can be predicted by several trait predictors such as the neuroticism, extraversion, conscientiousness, openness to environment, impulsiveness, sensation seeking, shopping enjoyments and loss in self-control. And both consumer's cognitive and affective impulse buying tendency can significantly predict their actual impulse buying. In particular, the relationship between the BFM and IBT are clearly defined. Through the meta-analysis, this study has confirmed that only conscientiousness, extraversion, openness to environment and neuroticism have a significant correlation with consumers' impulse buying tendency, whereas the effect of agreeableness is insignificant. Notably, the effect of agreeable is found to be subjective to different IBT measurements. The effect tends to be stronger when associated with cognitive aspects of IBT than affective aspects IBT. In this regard, the agreeableness may

mainly account for the function of buying impulsiveness. This view is also supported by recent studies in cognitive ability. Importantly, significant and positive associations were extensively observed between agreeableness and an individual's cognitive ability (Curtis et al., 2015; Doucet et al., 2106). Thus, further studies are encouraged in order to validate these associations in IB domains.

In addition, the meta-analysis also offers some insights into the UPPS impulsivity model. The results suggest that sensation-seeking is different from other dimensions of the UPPS impulsivity ($\Delta\chi^2(df=1) = 3.64, p=0.06$); therefore, it may not be a valid component under impulsivity. One possible explanation might be that the sensation-seeking trait follows a curve developmental trajectory that peaks sharply during late adolescence before falling during early adulthood (Romer et al., 2010). Thus, its impact may be contingent on the age of the participants or whether or not a student or adult sample is used. Yet, as far as this study is concerned, this does not seem to be the case as the moderation tests for both the gender and sample components are not found to be significant at $p=0.1$ level. Alternatively, the difference between sensation seeking and the remaining three impulsivity elements might be better explained by the biological structure of the human brain. According to Steinberg (2008), sensation seeking impulses may be generated by dopaminergic subcortical structures, whereas the psychological processes are associated with inhibitory control; similarly, premeditation and perseverance are known to correspond to the frontal area. Thus, the two types of elements may indeed underlie different types of information processing during an IB, such as the impulse generating vs. the impulse controlling (Carver et al., 2009; Hofmann et al., 2009).

The meta-analysis also noted that several moderators may alter the relationship between IB traits and IBT. For example, the power distance, as one of six cultural dimensions proposed by Hofstede and Bond (1984), may play an important role in impulse buying as it explains 78% and 48% of the variance on impulsiveness and situational traits respectively. Especially, it draws on the concern on the function of power distance on the impact from impulsiveness to IBT. Whereas the previous study suggests that there is a positive association between power distance and impulsiveness and a negative association

between power distance and IBT (Zhang et al., 2010), this meta-analysis indicates that the over impacts between impulsiveness and IBT tend to be positive and significant after moderating based on the level of power distance.

However, this meta-analysis also suffers from several limitations. Firstly, the number of primary studies is small. Since this meta-analysis especially focuses on IB traits and emphasises on the quality of included studies more than the quantity, only 39 papers were finally taken into consideration. Although 39 studies provide a comparatively large enough sample for analysis, a total of 61,654 participants and 119 effects are analysed, it is recommended (for subsequent meta-analysis) that more papers about this field are taken into consideration in order to determine whether the variance can be better explained and paving the way for a better estimation. Secondly, effect size can be better estimated by meta-analytic SEM if the data is available. Yet, this meta-analysis is unable to obtain sufficient data; therefore, the SEM is not identified. In this regard, further studies are encouraged to surmount this limitation through the framework provided by Cheung (2015), which proposes a two-stage meta-analysis based on SEM. It pooled the covariance matrix for SEM based on the covariance/correlation matrix that was used in primary studies (Cheung and Chan, 2005).

Chapter 4 Social Effectiveness and Impulse Buying: An Evolutionary Account

4.1 Introduction

As lamented by Buss and Penke (1991), "*modern personality psychology has moved largely away from theories of human nature and focus almost exclusively on individual differenceone consequence resulted is that the fundamental motives of behaviours are still vague for researchers* (Larsen and Buss, 2010)". The criticism applies to contemporary knowledge about Impulse Buying (IB). Much efforts in this field have been devoted on IB traits (Rook, 1987), situation-personality exchanges (Parsad et al., 2017), as well as two-factor decision-making systems (Strack and Deutsch, 2004; Caver et al., 2009). However, few have considered the nature of IB. It is astonishing to notice studies know little about why IB can be kept across generations and is being increased popular in real life (Bratko et al., 2013; Amos, et al., 2014). Where the previous arts, including the empirical work in this thesis, project 2, suggest that the elemental traits, such as the Big Five Personality Model (BFM), may account for the fundamental feature of IB that helps explain the nature of IB, yet, despite the fact that all the five dimensions have a significant influence on IB, as suggested by project 2, the BFM itself turns out to be co-related, suggests that there are more traits at the fundamental level that bring about changes in BFM (Digman, 2007). Therefore, contemporary IB knowledge show limited ability to elucidating the nature of IB. Thompson and Prendergast (2015) opine that researches owe reconsideration. Especially, to stress such concern, as Buss and Penke (1991) suggested, an evolutionary account of human might be valuable and necessary because it provides the only currently cogent metatheory for the entire field of psychology, which in return yield potential conceptual tools to ripe for these fragmentary findings from personality study to mature into explanatory science (Buss, 1995) and reveal its important consequences for evolutionarily relevant outcomes (Buss and Greiling, 1999, Ozer and Benet-Martinez, 2006). For example, while studies have long been described IB behaviours, none of them could explain the logic behind such inheritability and stability (Bratko, et al., 2013; Seenkamp and Mayden-Olivares, 2015). Given the fact that IB often predicts adaptive disadvantages, such as regretting feelings or economic loss (Rook, 1987), academics are required to explain the stability and inheritability more than merely describing them.

While the previous field model suggests an individual's impulse buying tendency may be controlled and altered by the psychological forces that surrounds the consumer, the subsequent meta-analysis, in line with the 3M model, show that these psychological forces may resides at different level of a trait hierarchy. Particularly, the 3M model and the result from meta-analysis suggest that effects from elemental level tend to stable across different samples. From this view, the elemental traits may yield a potential in studying of the evolutionary account of impulse buying and to explain the stability across samples and inheritability across generations (Buss, 1995). Hence, this study further extends the study of elemental traits and tries to favour an evolutionary account of the impulse purchase.

4.1.1 The General Factor of Personality

Primarily, much of modern psychology studies have been noticed individual difference can be moderately heritable and shows stability over time, indicating it may subject to evolutionary selection (Roberts and DelVecchio, 2000; Johnson et al., 2008). Especially, Rushton (1985) suggests the evolution of personality may base on "K" reproductive strategies that involving having fewer offspring but investing large time and resources in each. A human who uses the K-strategy were found to be more intelligent, altruistic and law-abiding than the others. Therefore, personality may evolve along with charters that advanced the K-strategy and consequently, there might be a single K-dimension that underlies much of the field of personality. Nevertheless, empirical support for the K-dimension was barely satisfactory. For example, Bogaert and Rushton (1989) found that the average correlation between single indices of the K-dimension was low, although it had been significantly correlated with self-reported delinquency, sex guilt, mating efforts as well as general intelligence. Similarly, the factor analysis also failed to detect the genetic origins of the K-factor in the study of Rushton and colleagues (2007), while one Mini-K scale correlated with altruism and intelligence.

Recently, a General Factor of Personality (GFP) has received renewed attention due to a single dimension personality being observed in a wide range of populations and that explains 20%-60% of the variance among traits (Van der Linden et al., 2010). In conjunction with the developments in factor models of traits, the critique on its paradigms continues to

exist even now. Except works provided by Eysenck (1987), McCrae and Costa (1987) and others posit either a three-dimension or five-dimension personality paradigms; a couple of studies recently drew consideration on a General Factor Model (GFM), where a single, higher-order personality factor is believed to exist (Just, 2011).

While the Big Five dimensions were initially believed as orthogonal, several later studies have reported significant correlations among the Big Five dimensions. Moreover, a meta-analysis of the correlations has revealed at least two stable higher-order factors personality above the Big Five (Digman, 1997). One is the Alpha factors, as labelled by Digman, responses to the Big Five dimensions of Agreeableness, Conscientiousness and Emotional stability; the other is the Beta factor loaded by Openness and Extraversion. These two factors were further re-named by DeYoung and colleagues (2002) as “Stability” for Alpha factor and “Plasticity”, respectively for Beta factor from a trait evolutionary perspective. Considering that strong empirical evidence supports “Big Five”, from which the Alpha and Beta were extracted, as inheritable and both the factors emerge in early childhood, it has been argued that it would be much more appropriate to take a biological perspective of them (Riemann et al., 1997). In this way, they proposed Stability refers to the avenue through which humans maintain stability through the ascending rostral serotonergic system, whereas Plasticity denotes the tendency to interact with novel stimuli via the central dopaminergic system. In addition, DeYoung and colleagues postulated that Stability and Plasticity, differentiating to Big Five dimensions, are in fact complementary rather than being contradictory. In this regard, Just (2011) stated: “*One must possess plasticity to achieve stability in novel situations, and stable relationship and emotions allow one to remain in secure when approaching new situations.*”, In the meantime, the connection between Plasticity and Stability also indicates the possibility of a single and higher-ordered personality residing on the apex of the personality hierarchy, namely the General Factor of Personality (GFP).

Musek (2007) was the first scholar to have empirically presented a general factor of personality. Inspired by the meta-analysis from Digman (1997) and DeYoung and colleagues (2002), Musek (2007) re-examined different personality measures of the Big

Five in three independent samples. His study found a “Big One” personality, as labelled by Muek, which was found to positively correlate with the models involved and elucidated 60% of the source of the variance. Muek opined that the Big One should be the most general and non-cognitive personality facets. This view was lent credence to by a study from Rushton and Irwing (2008). They replicated Muek’s (2007) study under a structural equation model and observed that the GFP explains 45% of the variance. Based on their subsequent nested-model test, Rushton and Irwing both noticed the inexplicable absence of the GFP from the structured model whereas the presence of constraints on the correlations (zero) between Stability and Plasticity would yield a poor model fit. Therefore, it is suggested that a GFP positions at the peak of personality, while the GFP is unlikely to be a statistical artefact or a result of response sets. Such conclusion is also further supported by the findings of Rushton and colleagues (2008). The GFP was found as identifiable and explained 37% of the source variance, when the Big Five factors were re-constituted using the 36 original scales as opposed to the direct measurement used in Muek (2007). Besides, Rushton and colleagues also tested GFP on 29 compound personality scales, which included the Eysenck Personality Questionnaire, the Social Responsibility Questionnaire, the Social Responsibility Questionnaire as well as the Self-Report Delinquency Questionnaire. In a sample of 332 pairs of twins (174 monozygotic and 148 dizygotic), a higher order genetic GFP accounted for 32% of the Big Five genetic variance and 29% of the variance in the lower-level traits were identifiable. The heritability of GFP was notified as 82%. Similarly, a study by Veselka and colleagues (2011) also provided insights into the role of genetic factors in the GFP. Notably, their studies are deployed as a regression analysis between the Dark Triad of personality (Machiavellianism, Narcissism and Psychopathy) and Supernumerary Personality Inventory (SPI) before being examined for a heritable GFP. The factor analysis demonstrated that, with the exception of Dark Triad and SPI traits, a GFP could also be extracted and contributed around 30% of the variance in the twin samples. These empirical findings typically favour a GFP and its genetic dominance.

Unlike the aforementioned studies which provide solid evidence to support GFP through

its association to multiple factors, such as the Big Five and the Stability and Plasticity, some also attempted to test GFP using a single factor model, such as the Spearman's g, which measures the general intelligence of an individual. In the study conducted by Schermer and Vernon (2010), Spearman's g is measured by the Multidimensional Aptitude Battery (MAB; Jackson, 1984) and tested in a sample of 507 sibling pairs. In this study, each pair of sibling was randomly assigned to one of the two samples whereas factor analysis was run separately in both of them. As expected, a GFP was extracted in Schermer and Veron's study as well and accounted for approximately 55% and 42% variance for each sample, respectively. Moreover, a significant correlation between GFP and Spearman's g was found in both samples. In this regard, the current research study provides compelling evidence to the debate of GFP in terms of single-factor solutions.

These evidence basically posit that the GFP is a substantive higher-order personality factor rather than other personality models, such as the BFM (Figueredo et al., 2004; Irwing, 2013; Van der Linden et al., 2016). Recent studies suggest the GFP account for a tendency towards socially desirable behaviours that, from an evolutionary viewpoint, will positively influence one's reputations and consequently result in selective advantages, such as heightened probability of being selected as a mate, a co-worker, and a leader (Rushton et al., 2008; Irwing et al., 2012).

4.1.2 GFP as social effectiveness

While studies used to suggest that the GFP only reflects methodological artifacts by contending that high-GFP individuals may provide a more socially desirable response to personality surveys, although these responses may not necessarily reflect how they would typically behave (Chang et al., 2012; Pettersson and Tukheimer, 2012), more recently, there have been increasing empirical supports on the GFP as a substantive factor that reflects upon general social effectiveness and exerts a broad influence on behaviour (Rushton et al., 2008; Van der Linden, 2009; Van der Linden, 2011b; Loehlin, 2012). According to this view, individuals with high GFP level have the requisite knowledge, skills,

and motivations to act in ways that the others deem socially desirable, which, in turn, raises their chances of achieving social goals.

Such a view has been advanced by a wide range of lab and field studies. For example, Rushton and Irwing (2011) opined that high-GFP individual has a higher probability of being selected as a mate, co-worker or leader. Similarly, Van der Linden and colleagues (2010) found that high-GFP adolescents were more likely to be rated as popular and likeable by their classmates. In addition, lab studies also suggested that GFP shows a strong association with other established measure of social effectiveness and emotional intelligence (Dunkel et al., 2014; Van der Linden et al., 2014).

In this regard, both the presence in shared variance among trait measurements and its evolutionary implications suggest that the GFP reflects a viable construct of social effectiveness, as opposed to a statistical artifact, as suggested by several studies (De Vries, 2011; Hopwood et al., 2011). Hence, as stated by Van der Linden and colleagues (2016), the GFP introduces new insights into the hierarchical structure of personality as well as the possible evolutionary origin of individual differences, providing a fruitful ground to investigate how behavioural tendencies, such as the IBT, may fit within personality factors space as far as social effectiveness is concerned.

4.1.3 Impulse buying as a social behaviour

Coincidentally, impulsive purchases have long been involved in the construction and maintenance of consumer's self-identity, in the attainment of social status and in attempts to the management of mood states (Elliott, 1994). Therefore, consumer's impulsive purchases tendency reflects an individual's inclination towards social desired products or goals. For example, students may express their group belongingness by purchasing sports team licensed merchandise (Kwon and Armstrong, 2002); female consumers meanwhile may convey their fashion statement through purchasing fashion-oriented products, such as clothes, jewellery or cosmetics (Dittma et al., 1996). Equally, consumers may buy symbolic and self-expressive goods relating to appearance and the emotional aspect of self (Dittma et al., 1995). Finally, it is frequently observed that young consumers try to build

their self-confidence by exhibiting impulsive behaviours, which include impulse buying (Jürgensen and Guesalaga, 2018).

On the basis of these findings, it appears as though impulsive purchase is more than a process of materializing a product; it is an important social behaviour through which consumers try to establish their social identities or self-esteem with a view to attaining the desired social status. In this regard, the tendency to make a purchase impulsively may, therefore, depend on the magnitude of their inclinations towards social effectiveness. Therefore, in this case, it is hypothesized:

Hypothesis 1:

The GFP has a positive impact on consumers' impulse buying tendency.

In addition, the field model also suggests that the life space of one individual has multi-levels, where farer side psychological forces can alter the individual both directly through itself and indirectly through closer side forces (Lewin, 1951). Similarly, the 3M model also suggests that lower level and more abstract traits have both direct and indirect influence on one's buying tendencies through influencing higher-level traits (Mowen, 2000). From this view, both of the models suggest the GFP may have both direct and indirect effects on the IBT. Especially, whereas the GFP reflects an individual's inclination to socially desirable products or goals, its impacts may refer to an individual's different behavioural mechanisms/strategies towards the attainment of such a goal. In line with theory of reinforcement learning, approaching potential rewards and avoiding potential punishment are believed as fundamental to all goal-directed behaviours (Gray, 1981; Caver and White, 1994; Bokesem et al., 2008). Thus, a stronger desire for social resources might indicate a stronger desire for rewards. Higher GFP affords more opportunities for reward seeking. Moreover, as a matter of fact, impulse buyers have been widely noticed as rewards seekers more than punishment avoiders, shopping rewards are significant triggers of impulse buying (Ramanathan and Menon, 2006; Verplanken and Sato, 2011; Davenport, 2012). These links suggest rewards seeking may play an important role between the social

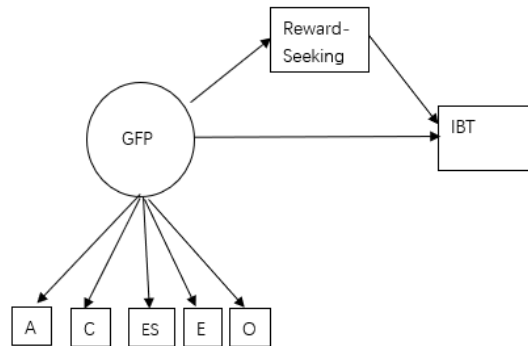
effectiveness and an individual's impulse buying tendency. In line with the field model, it is suggested a structured model which social effectiveness may influence impulse buying both directly and indirectly through reward-seeking.

Hypothesis 2:

Influence from the GFP to the IBT is partially mediated by consumers' inclination to reward-seeking.

Thus, we represent our hypothesis as per the follow structured model:

Table 4.1.4 Structural Equation Model of GFP



The model suggests a partial mediation model that reward-seeking partially mediated the effect from GFP on IBT. The GFP is independent variable that is indicated by the big five personality. The IBT is the dependent variable that stands for an individual's overall tendency of making an impulse buying rather than the actual buying behaviour (Verplanken & Herabadi, 2001).

4.2 Methods

4.2.1 Data Collection and Coding

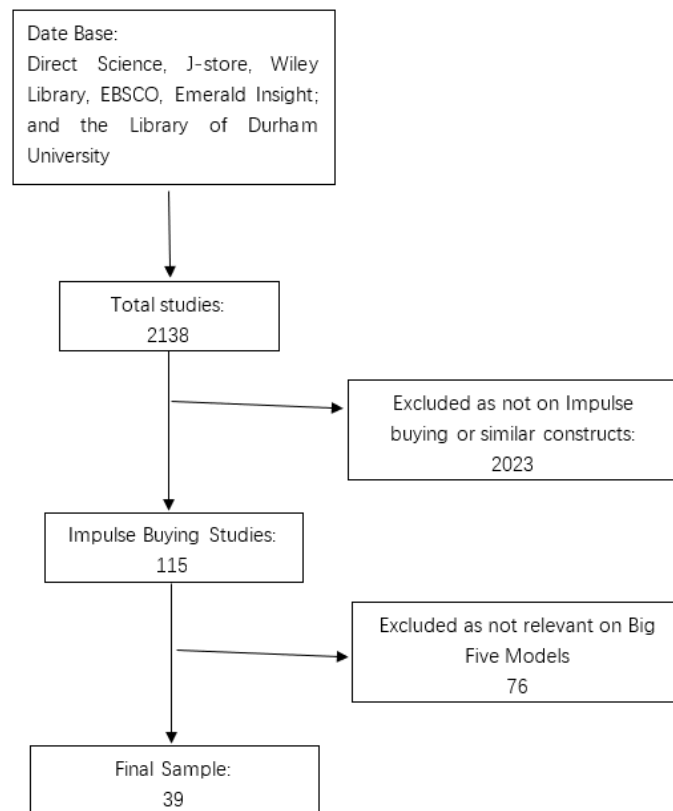
To prove the hypothesis, this chapter conducts a meta-analytical analysis. The literature research is conducted in six databases, including Direct Science, J-store, Wiley Library, EBSCO, Emerald Insight as well as the Library of Durham University. Literature that published between 1948 and 2018 are included. Written language is restricted as

English. Research domains are restricted within business, management, marketing, economics, sociology, psychology and clinical and medical. Research strategies are adapted from the previous meta-analysis. Table 2.2.1 provides a summary of the research strategies employed. Within these research strategies and dataset, titles and abstracts are read carefully.

In addition, several selective criteria are used to distil the sample for meta-analysis.

Articles are included when they contain 1) covariance matrix of the Big Five Model and impulse buying or impulse buying tendency; 2) a measure of impulse buying or impulse buying tendency; 3) useful and reliable information for meta-analysis. A study provides useful and reliable information when it reports details of samples and observed effects in terms of Pearson product (coefficient) or items can be transferred into Pearson product (t-values) as well as the measurements of these effects; And a cutoff value for the measurement reliability is 0.75, studies reported lower reliability values of their measurements are excluded in the meta-analysis. Figure 4.2.2 provides the flow chart of the literature selection process.

Figure 4.2.2 Flowchart of the literature selection process (Meta-analytical)



As a result, 11 out of 115 impulse buying studies are targeted. For the 11 primary studies, a total of 11 correlation matrixes are captured from 6,224 participants. The following table (Table 4.2.3) describes details of the included study.

Table 4.2.3 Details of the 11 primary studies

Author	Year	Sample Size	Age	Gender	Power
Badgaiyan and Verma	2014	508	25	No Difference	77
Chen and Lee	2015	527	25	F	58
Donnelly et al.	2012	201	36	No Difference	40
Farid and Ali	2008	400	23	F	55
Gohary and Hanzae	2014	247	26	No Difference	58
Husnain et al.	2016	325	27	Not available	not available

Olsen et al.	2016	1644	43	No Difference	31
Shahjehan et al.	2012	640	25	No Difference	55
Stephen and James	2007	252	21	No Difference	40
Thompson and Prendergast	2015	842	23	F	68
Sofi and Najar	2018	638	26	M	not available

Each effect is coded according to the relationship of the independent variables, the GFP, and mediator (reward-seeking), and impulse buying tendency. Table 4.2.4 provides a summary of constructs and aliases used in the analysis.

Table 4.2.4 Description of constructions in the meta-analysis

Determinant	Description	Aliases	Representative Studies	Example Operationalization
Big Five Model	A general pool of all types of measures of Big Five personalities (Wilt and Revelle, 2015)	1) Openness to Environments; 2) Conscientiousness; 3) Extraversion; 4) Agreeableness; and 5) Neuroticism/Emotion instability	Verplanken and Herabadi (2001); Sun et al. (2004); Thompson and Prendergast (2015)	40-item Lexical Big-Five Measure (Saucier, 1994); NEO Inventory (McCrae and Costa, 1985)
General Factor of Personality	A single and higher-ordered personality residing on the apex of the personality hierarchy	Manifested by the BFM factors, such as: 1) Openness to Environments; 2) Conscientiousness; 3) Extraversion; 4) Agreeableness;	DeYoung et al. (2002); Musek (2007); Veselka et al. (2011)	Latent Variable manifested by the BFM Musek (2007); Schermer and Vernon (2010)

		and 5)		
		Neuroticism/Emotion		
		instability		
Reward-Seeking	An individual's psychological mechanism to estimate expected rewards or punishments of choices and accordingly make adjustments to these estimations on a continuous basis to have a positive consequence of their behaviours.	Shopping enjoyments; Hedonic Values; Positive Affect; Seeking varieties.	Ramanathan and Menon, (2006); Verplanken and Sato, (2011); Davenport, (2012)	International Positive and Negative Affect Schedule Short Form measure of affect (Thompson and Prendergast, 2015)
Impulse Buying Tendency	Consumer's overall tendency to buy impulsively; comprising cognitive impulse buying tendency and affective impulse buying tendency	Cognitive impulse buying tendency; Affective impulse buying tendency; Buying impulsiveness; Buying impulse; Urge to buy;	Verplanken and Herabadi (2001); Jones et al. (2003)	20-item scale to measure general impulse buying tendency, such as: "I often buy things spontaneously"; "I often buy things without thinking." (Verplanken and Herabadi, 2001)

(Verplanken and
Herabadi, 2001)

4.2.2 Integration of effect sizes: The Two-Stage Meta-analytic SEM

To integrate effects from different study samples, this study conducts a two-stage meta-analytic SEM (TSSEM) which integrates the framework of Structural Equation Modelling (SEM) into a meta-analysis (Cheung, 2018). The first stage of TSSEM combines the co-variance matrix reported in primary studies. Thereafter, it uses the combined matrix as the co-variance/co-relation matrix in the second stage of the SEM. The TSSEM entails several advantages over a two-level or Three-level meta-analysis, along with other SEM-based Meta-analysis (Cheung, 2018). To begin with, it provides statistical powers by combining several primary studies. Enhanced statistical power will improve both the performance of SEM (Fan et al., 1999) and the estimation of mediation effects (Fritz and MacKinnon, 2007). Secondly, as the TSSEM pools the co-variance/co-relation matrix based on the observed correlation matrix from primary studies rather than by corrected effect sizes (Viswesvaran and Ones, 1995), it avoids potential statistical biases from using corrected effect size as the co-variance/co-relation matrix for the stage two SEM on the one hand (Home et al., 1992; Brown and Peterson, 1993). On the other hand, it allows the model to address the issue of missing value based on the maximum likelihood (Cheung and Chan, 2005), thus providing a more accurate estimation than using arithmetic means.

4.3 Results

4.3.1 Stage One: Pool the Co-relation Matrix

In line with the findings of Cheung and Chan (2005), this study combined the 11 correlation matrixes captured from the above primary studies. Given that the sources of variance among these studies are complex and high-level heterogeneity can be expected, this TSSEM employs a random model to combine these matrixes, which suggests that it allocates each correlation matrix in relevance to their respective sample sizes.

To process the statistic, this study employs the R program and makes use of the R package *metaSEM* (Cheung, 2018). The package automatically combines the matrix once the random model is specified. Therefore, the combined matrix is given as below (Figure 4.3.1):

Figure 4.3.1 Pooled Correlation Matrix

	A	C	ES	E	O	IBT	RS
A	1						
C	0.14 [·]	1					
ES	0.13 [*]	0.08	1				
E	0.2 ^{***}	0.08	0.17 [*]	1			
O	0.23 ^{***}	0.09	0.1 [·]	0.27 ^{***}	1		
IBT	0.12 [*]	-0.18 [*]	-0.02	0.14 [*]	0.13 [·]	1	
RS	0.11 [·]	0.06	0.03	0.13 [·]	0.18 ^{***}	0.24 ^{**}	1

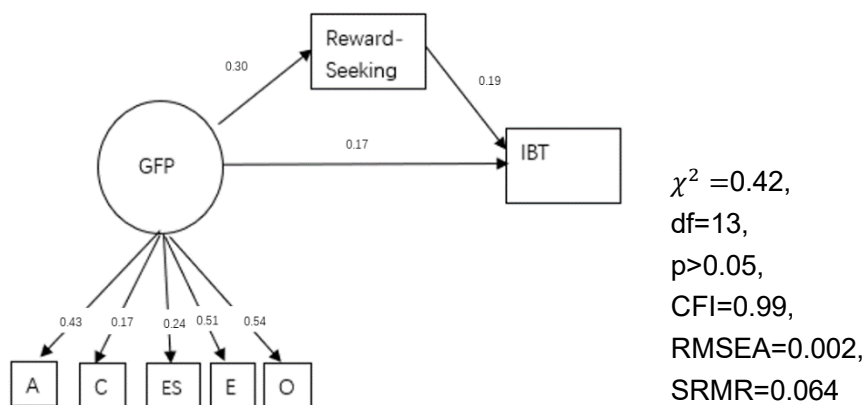
A: Agreeableness; C: Conscientiousness; ES: Emotion Stability; E: Extraversion; O: Openness; IBT: Impulse buying Tendency; RS: Reward Seeking.

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

4.3.2 Stage Two: Structural Equation Modelling

This study further computes the path analysis using the combined matrix as ingredients for the SEM. Figure 4.3.2 provides the path model.

Figure 4.3.2 Path model of the TSSEM



To begin with, the constructed reflective SEM model turns to fit the data very well ($\chi^2 = 0.42$, $df=13$, $p>0.05$, $CFI=0.99$, $RMSEA=0.002$, $SRMR=0.064$). Thus, it suggests a hierarchical structure in which a higher-order single dimension personality, the GFP, loads to Reward seeking and, in turn, loads to IBT. In particular, the measurement model suggests that all the five BFM dimensions significantly manifested the GFP at $p=0.1$ level. The correlation between the GFP, and agreeableness, conscientiousness, emotion stability and openness was found to be 0.43, 0.17, 0.24, 0.51, 0.54, 0.17 respectively. The reported correlations coefficients are consistent with the findings of the previous studies (Digman, 1997; Van der Linden et al., 2010; Rushton and Irwing, 2011). Hence, the results provide further evidence that a general factor personality exists and occupies the apex of the personality structure.

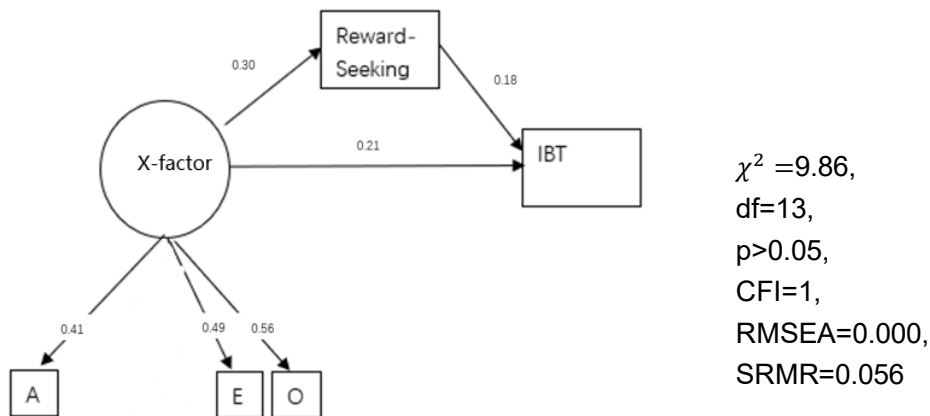
In addition, the path model provides evidence to support both hypotheses. Firstly, a positive and significant association are observed between the GFP and IBT ($r=0.17$) when controlling the effect of reward-seeking. Thus, hypothesis one is supported. Secondly, there are also significant and positive associations between the GFP and reward-seeking (0.3) as well as between reward-seeking and the IBT (0.19). Thus, according to Imai and colleagues (2010), there is a partial mediation effect, through the reward-seeking, between the GFP and the IBT. Thus, hypothesis two is also supported. It is notable that the effect size for the mediation effects reported by the TSSEM is 0.06. Therefore, the total effect from the GFP to IBT is 0.23, which indicates the total direct effect ($r=0.17$) and the indirect effect through reward-seeking (0.06).

4.3.3 Nested Model

As it can be observed from Figure 4.3.2, the latent variable, GFP, is mainly manifested by three of the BFM, the Agreeableness, Extraversion and Openness to environments, with correlation coefficient of 0.43, 0.51 and 0.54 respectively. Hence, to know whether there is better explanation than the GFP approach, this meta-analysis further tests a nested model by eliminating the Conscientiousness and the Emotion Stability factor from the structured equation. It is assumed that there is an alternative latent variable, "X-factor", of the GFP, which is manifested by the Agreeableness, Extraversion and Openness to

environments. An ANOVA test will be conducted between the two models thus any difference between the two models can be identified. Figure 4.2.4 provides a path analysis of the nested model.

Figure 4.3.2 Path Model of Nested TSSEM



It turns out that the nested model fit the data very well ($\chi^2 = 9.86$, $df = 13$, $p > 0.05$, $CFI = 1$, $RMSEA = 0.000$, $SRMR = 0.056$). Results from the nested model also support our hypothesis. At first, an “X-factor” is manifested by the Agreeableness, Extraversion and Openness to environments with coefficient of 0.41, 0.49 and 0.56 respectively. All effects are significant at $p < 0.05$ level. In return, the “X-factor” influence IBT positively and significantly. The coefficient is 0.21 after controlling the effect from Reward-seeking. Thus, hypothesis one is supported. At the second place, there is also positive and significant effects from “X-factor” to Reward-Seeking and from Reward-Seeking to IBT. Thus, according to Imai and colleagues (2010), there is a partial mediation effect, through the reward-seeking, between the GFP and the IBT. Hence, hypothesis two is also supported. ANOVA suggests there is no significant difference between these two models, suggesting the “X-factor” might be an alternative and simpler approach than the GFP approach.

Hence, result of the nested model provides a new story. At first, it suggests there is a X-factor that has no difference to the GFP factor in terms of its influence on rewards-seeking and impulse buying. Thus, on the one hand, it may suggest a simpler model to explain the evolutionary account of impulse buying which require only three indicators for

the latent variable. On the other hand, it also suggests the X-factor may be the same as the GFP, which suggests the GFP is only related to the A, E, and O dimension of the BFM. After controlling or excluding the N and C dimension, the GFP factor can be remain manifested. From this view, future empirical works are encouraged to test the heterogeneities and homogeneities between the X-factor and the GFP.

4.4 Discussion

To summarise, this chapter proposed a consideration on an evolutionary account for consumers' impulse buying. Given that previous studies have pervasively noticed that impulsive purchase is an important strategy for individuals to express their social identities or belongingness, it is believed that individuals' tendency to make purchase impulsively reflects their inclination towards social desired products or status. Hence, a stronger desire may indicate a stronger impulsive tendency, which, in turn, suggests that the GFP positively predicts Impulse Buying Tendency (IBT). Using a sample of 6,224 participants, this study provides evidence for such a hypothesis. A positive and significant association can be observed between the GFP and IBT ($r=0.23$). Especially, the effect is partially mediated by reward-seeking, which includes consumers' preference for shopping enjoyments or positive mood states. The indirect effect through reward-seeking accounts for approximate 26% of the total effects, suggesting that it tends to be an important mediation for the impact from the GFP to the IBT.

In wake of the above evidence, the result emphasized the social implications of an individual's IBT. Whereas studies have been used to criticise impulsive purchase as "neurotic" and "dysfunctional" behaviours (Bayley and Nancarrow, 1998; Sohn and Choi, 2012), this study clearly shows that impulsive purchase may serve the interest for social effectiveness and impart certain adaptive advantages for the individual. For example, impulsive purchases can be made to build the desired identity so that the individual can be related to a better social resource (Wilcox et al., 2009). Similarly, impulsive buyers are found more able to maintain positive mood states by making an impulsive purchase (Ozer

and Gultekin, 2015). This is in consonance with the studies on the GFP and trait emotional intelligence, suggesting that a high GFP individual is better at mood management (Veselka et al., 2009). In these regards, impulse buying tends to be a functional behaviour and is accompanied by certain adaptive advantages, suggesting relevant IB traits are less likely to be depleted by the natural selection.

Besides, this study also supports the existence of the GFP by validating it with real-world outcomes. While most studies in the field are mainly concerned the GFP with other higher-order psychology constructs, such as trait emotionality (Rushton et al., 2009) and the genetic origin of the GFP (Rushton et al., 2008), this study attempts to provide behavioural evidence of the GFP. Thus, it provides further support of the existence of the GFP over a statistic artifact (De Vries, 2011) on the one hand; on the other hand, it emphasises the practical importance of the GFP. For example, in marketing domains, it encourages individuals to seek rewards from their shopping experience, which, in turn, engenders their impulse buying tendency. Yet, in exchange for the potential expense of buying impulsively, such as economic loss, individuals can acquire social desired products or status. In this case, higher GFP individual tends to make a more impulsive purchase.

However, it does not suggest that impulse buying should, in this case, be encouraged. As a matter of fact, the impulsive purchase can assume various forms and not all of them thus may be associated with goals of achieving social effectiveness (Stern, 1962). While this study takes a general account of the impulsive purchase, it is unable to distinguish the impact from the GFP to the IBT for specified IB forms. Thus, the conclusion drawn can be different when a different connotation of IB is concerned. For example, a suggestion relating to IB will be more consistent in aiming for social effectiveness rather than seeking pure impulsiveness as it takes into account more details on the social values of the accounts (Luo, 2005). Hence, further studies in the field of GFP and IBT are encouraged in order to test this result with different forms of IB. The IB concepts provided in Chapter Three may, therefore, make a significant contribution in this regard. In addition, while this study shows that reward seeking may partially mediated the effects from the GFP to IBT, it may also play a moderation role. The effects from GFP to IBT may

depends on reward seeking. Consumers have stronger desires to rewards may have stronger impulse buying inclinations for socially desired products. Yet, at the current stage, because the TSSEM is not able to process a moderation analysis of a continue variable and it is also seems there is no sufficient data available so far in the study of impulse buying, this study is not able to conduct a moderation analysis. Further studies are strongly encouraged to test the moderation role of reward-seeking.

Chapter 5 Conclusion

5.1 Summary of Findings

While studies have pervasively criticised the research of Impulse Buying (IB) as being in conceptual disarrays and with mixed empirical evidence, this thesis provides solid evidence to suggest that conceptual disarrays can be co-coordinated and mixed evidence can be synergised. Therefore, through which, it provides new knowledge and findings of impulse buying.

Especially, Chapter 2 provides a systematic review of previous IB concepts. A total of seventy papers which focus on IB conceptual frameworks and relevant constructs are distilled from the literature selection process. The sample comprises studies from a wide range of research domains such as marketing, management and clinical works. According to these studies, several ways of defining impulse buying can be identified, such as the impulse mix (Stern, 1962) and the buying impulsiveness (Rook, 1987). Yet, these concepts differ heavily from their theoretical background, methodological tools and practice focus and thus leave inconsistency among each other. However, in essential, they investigate the same concept but only from different perspectives and these concepts are seeming-independent but indeed interdependent. For example, Stern's (1962) concepts, the impulse mix, may help explain the difference between functional impulse buying and dysfunctional impulse buying according to Fenton-O'Creevy and colleagues (2018). While pure impulse buying tend to be dysfunctional purchase due to unreflective to their purchase, the other forms of IB in the impulse mix tend to be functional IB as they have rational shopping motivations, such as expressing social identities or re-stocking a consumption product.

Thus, with notice of such links, this systematic review synergises conceptual fragments from early IB concepts and offers two new findings. First of all, the systematic review develops the impulse mix from Stern (1962). Previously, Stern (1962) introduces an impulse mix and views Impulse buying in different forms, such as the planned impulse buying, the suggestion impulse buying, the reminder impulse buying and the pure impulse

buying. Yet, the framework mainly offers a brief and quick definition of impulse buying but provides limited knowledge about the details or features of each form of impulse buying in the impulse mix. Especially, the components of each IB forms are missing from the definition. Furthermore, the impulse mix approach also focuses on the role of external stimuli. As a result, the concept is of only limited use as scholars can find a few useful information about the IB concept, such as the features and details of the definition. Yet, the definition, though is limited, provides a relatively more comprehensive view of impulse buying forms than those others that view IB from a single perspective. Thus, this review offers a new IB conceptual framework by conducting a complementary effort to the impulse mix. It captures impulse buying features from previous conceptual frameworks and reallocates them into relevant impulse buying forms. Thus, for instance, pure impulse buying is equipped by features such as impulsiveness, lack of premeditation, and dysfunctional while planned impulse buying is equipped with functional, economic concerns and functional. On the one hand, the new framework provides a details account of each IB forms, therefore, its users will not be bothered by the unclearly defined IB concepts; On the other hand, the framework also differentiates each IB forms by the unique features it contains. For instance, pure impulse buying may differ from planned impulse buying from its nature. Planned impulse buyer tends to evaluate sale offers thus find the most economic choice thus their purchases are usually functional. Yet, pure impulse purchase is often made on buying impulsiveness thus they are always dysfunctional. In this view, the new framework offers a comprehensive account of previous IB concepts and helps distinguish the difference between each form of impulse buying. However, impulse buying is often a dynamic process that comprises its unique antecedence, triggers, processes and results (Xiao and Nicholson, 2013). These conceptual features may not only engage in impulse buying as in different forms but also at different buying stages. Hence, in the second place, to offer a dynamic view and disclose the psychological path for each IB form, this chapter further introduces the constellation model from the field theory to the impulse mix. According to the field theory, an individual's behaviour can be understood and predicted through constructing one's life-space/constellation comprising of

psychological forces that influence their behaviour at a given point in time (Diamond, 1992). Each of impulse buying forms thus can be represented by the unique path of psychological forces or the conceptual features that a consumer experience during different stages of a purchase. Thus, this thesis draws the constellation model to offer the dynamic of impulse buying processes. Especially, it provides both the path through different psychological forces and its related behavioural constellations. For instance, before making a purchase, consumers may internally experience psychological forces such as sensation-seeking. Accordingly, as an external expression of the internal psychological forces, consumers tend to browse and look for product varieties. Notably, the constellation model also helps differentiate IB forms as IB consumers may be surrounded by unique constellations. For instance, although all IB consumers may looking for product varieties, their motivation is different. Pure impulse buyer may look for hedonic values. Planned impulse buyer may look for better sale promotions. Suggestion impulse buyer may focus on product feature that conveys social meanings and reminder impulse buyer may try to match the present shopping experience with the prior one. Thus, the constellation model of impulse buying model not only offers a comprehensive account of impulse buying features but also provide a dynamic view of both the psychological paths and behavioural paths. Particularly, the model shows how a certain form of impulse buying is processed at a given point of time. In return, it further develops the impulse mix from Stern (1962) and offers a new approach to define impulse buying.

After synergising conceptual disarrays in impulse buying concepts, chapter three makes a step in synergising fragmentary findings in previous IB research. As it has been widely noticed in literature, empirical findings on IB predictors provides inconsistency findings such as on its components, significant levels as well as its generality among genders, cultures and samples of different ages (Amos et al., 2013). Especially, there are no integrative efforts on trait predictors of impulse buying, despite that, traits have long been believed as central to the study of impulse buying (Rook, 1987; Thompson and Prendergast, 2015). With this notice, chapter three conducts a meta-analysis of trait predictors of impulse buying tendency and actual impulse buying behaviour. With 119

effects from 39 primary studies that selected from over 2,000 studies about impulse buying, the meta-analysis coded these effects in line with Mowen's 3M model (Mowen, 2000). Therefore, effects are allocated into four levels: elemental level, compound level, situational level and surface level. Especially, as a result, six of seven trait predictors at the elemental level, namely openness to environments, conscientiousness, extraversion, neuroticism, materialism and need for arousal significantly associate with consumer's impulse buying tendency. Only the effect of trait agreeableness is found insignificant. In addition, these effects are found consistent among different genders, cultures, age of samples. At the compound level, both impulsiveness and sensation-seeking are noticed positively and significantly predict one's impulse buying tendency. Yet, a subsequent three-level meta-analysis suggests effects from sensation-seeking may depend on the level of impulsiveness (Whiteside et al., 2011). And the effects are likely different for males and females, young or olds, high and low power distance, or different impulse buying tendency measurements (Dittmar et al., 1995; Coley, 2003). In addition, at the situational level, consumer's impulse buying tendency is found positively and significantly predicted by both shopping enjoyments and consumer's situationally loss in self-control. Similarly, these effects can also be different among samples, such as with different cultures and genders. At the final level, surface level, both cognitive impulse buying tendency measurements and affective impulse buying tendency measurements are proved to positively and significantly predicts actual impulse buying behaviour. Especially, the measurement turns to be stable among samples. Only the affective aspect IBT may subject to the participants reported score on power distance as it explains over 91% of the between-study variance. For these efforts, the meta-analysis manifests a total of 12 predictors to IBT or actual impulse buying. It provides averaged effect sizes and potential moderators on these effects.

In addition, while studies mostly concern how impulse buying tendency can be predicted by these trait predictors, there are few efforts to explain why these traits predict impulse buying. Hence, to develop the knowledge about impulse buying and to explain rather than merely predict it, chapter four conducts a meta-analytical study on impulse buying traits. Especially, the study provides evidence that there is a higher-order personality, the General

Factor of Personality (GFP), exists over the Big Five Model of Personality and significantly and positively predicts impulse buying tendency, with. In general, the GFP represents an individual's inclinations for socially desired resource that brings competitive advantages over the others. Thus, the association between GFP and impulse buying suggests impulse buying represents one of the ways that individuals acquire socially desired products and resources. In addition, the results also suggest half of the effects are found mediated by reward-seeking. A stronger desire for the socially desired resource indicates the individual tends to seek rewards from their behaviours. In return, seeking rewards, such as positive mood states or shopping enjoyments significantly predict one's impulse buying tendency. Thus, the results of the meta-analytical study disclose the evolutionary rationale of making an impulse buying. Impulse purchase may serve the interest of one's social effectiveness and impart certain adaptive advantages for the individual.

With above efforts, as a summary, this thesis has achieved both of its objects. It offers a comprehensive account of impulse buying through with three integrative works and offers empirical evidence to support and complement previous studies. At first, chapter two solves conceptual disarrays in previous IB conceptual frameworks. In line with Stern's (1962) impulse mix, this study integrates previous IB conceptual frameworks into four IB forms, namely the pure impulse buying, suggestion impulse buying, reminder impulse buying and planned impulse buying. Thus, it specifies the features, the difference and connections between each forms. Thereafter, it borrows the topological tools from the field theory and creat an impulse buying constellation, which not only reveals the dynamic progræsss of an impulse buying, but also shows the difference and connections between each IB forms. For this efforts, the previous seeming independent IB concepts are connected within the field model and the newly developed IB constellation yield a potential as a comprehensive account of impulse buying features.

In addition, at the second place, mixed findings have also been synergised in Chapter Three. In line with the 3M model, it offers averaged parameters and direction of 12 manifested predictors at four levels (Mowen, 2000). At first, 10 of 11 predictors of consumer's impulse buying tendencyies are confirmed. Thus results are consitent with

previous studies about the Big Five Model and IBT (Brakto et al., 2013; Badgaiyan & Verma, 2014). Especially, there is significant and positive associations between openness to environment, Extraversion, Neuroticism and IBT. Significant but negative association is observed between Conscientiousness and IBT. However, it turns out that the Agreeableness is not significantly linked with impulse buying tendency. In addition, the results also supports the study of Dittmar and Bond (2010) and Wu (2006) that there is a significant and positive link between materialism and impulse buying tendency. Moreover, at the elemental level, this study also provides further evidence that impulse buying is associated with an individual's need for arousal (Weinberg and Gottwald, 1982; Kacen and Lee, 2002). Besides, at the compound level, outcome of the meta-analysis is also consistent with previous work. It has been observed that both impulsiveness and sensation-seeking can predict impulse buying tendency positively and significantly (Weun et al., 1998; Huang, 2016; Olsen et al., 2016). Furthermore, situational level effects tend to have the strongest predict power on impulse buying tendency. Shopping enjoyments and situational loss in self control are found positively and significantly predict impulse buying tendency with averaged coefficient around 0.42. Such results provides further supports for previous studies such as Lee and Yi (2008), Thompson and Prendergast (2015), Youn and Fabern (2000) and Vohs and Faber (2007). Furthermore, at the surface level, both cognitive and affective aspect IBT are found positively and significantly predict actual impulse buying behaviour. Hence, the results of meta-analysis provides empirical evidence to support previous studies about the linkages between IBT and IB, such as (Beatty and Ferrell, 1998; Badagaiyan and Verma, 2014).

At last, this thesis also make an efforts on exploring the evolutionary account of impulse buying. It manifested a partially mediated model where social effectiveness influence IBT both directly and indirectly through reward-seeking. Thus, it provides empirical evidence to support studies about the General Factor models (Change et al., 2012; Pettersson and Tukheimer, 2012) and studies about the stability and inheritibility of impulse buyings (Bratko, et al., 2013; Seenkamp & Mayden-Olivares, 2015).

5.2 Limitations of the Findings

While the thesis has been designed with carefulness to make sure the outcomes are reliable and useful, it is not impervious to certain limitations. At first, the constellation needs further developments. The present constellation model provides the internal and external path of impulse buying but provided limited knowledge about the parameters and control variables on these paths. Thus, it is not clear so far, while consumer experience certain psychological forces as the IB is processed, to what degree that the forces would influence the consumer. In addition, the constellation at current stage tries to figure out conceptual disarrays thus missed the interaction between the shopping environment and the person. Another limitation is the sample size of the meta-analysis. The sample comprises over 60,000 participants which are a reasonable sample for meta-analysis but only 39 primary studies for the meta-analysis and 10 primary studies for the meta-analytical study, respectively. This may due to the meta-analysis adapts narrow selective criteria thus lead to few primary studies are included. While the small number of primary studies may influence the heterogeneity between studies therefore the results of the meta-analysis, it is expected the present outcomes should be manifested when releasing some of the selective criteria. At last, the approach of meta-analysis can also be improved. Currently, chapter 3 applies a three-level meta-analysis thus it estimates the dependence among each construct. However, it only able to provide effect sizes in simpler models, such as the direct effect from one independent variable to the dependent variable. As a matter of fact, the 3M model suggests a complicated model of trait hierarchies that includes complex mediation effects and potential moderations. Thus, to take these effects into concerns, the three-level model may be instead by meta-analytical models based on structural equation models.

5.3 Direction for Future Research

While the study provides several interesting findings, it suggests several directions for

future efforts. At first, it is encouraged to conduct further integrative efforts with more traits predictors and primary studies are included. Hence, evidence from this meta-analysis can be compared with future outcomes, such as through a meta-meta-analysis. At the second place, it is encouraged to further extend the constellation model of impulse buying by providing the parameters and potential control variables. Especially, studies are encouraged to investigate the cultural and gender difference on the paths in the model. This is because, according to the results of the meta-analysis in chapter 3, cultural and gender are two most salient moderators on effects on IBT and actual impulse buying. It is suggesting consumers from different cultural or genders may experience a different level of psychological forces thus leads to different paths of impulse buying forms. In third, future efforts can also be made based on theories from sensory marketing, such as investigating how sensation rather than cognition influence impulse buying, especially the pure impulse buying forms. Impulse buying has been noticed as unconscious, quick, unreflective with limited or no loading in cognition resource. Yet, few studies so far explain how responses are made before the consumer's cognition. Although sensory attributes, such as colour, design, fabric and fit, may play a key role in encouraging apparel product purchase intentions (Then and DeLong, 1999; Bei et al., 2004), not much work has been conducted in IB field so far (Youn and Fabor, 2000; Peck and Childers, 2006; Tifferet and Herstein, 2012). Furthermore, studies are also encouraged to investigate the interlinks between the situational loss in self-control and shopping emotions. While both the two constructs are noticed as significant and positively predict subsequent impulse buying tendency and behaviours, few works have been done to discuss their interactions and influence of such interaction on impulse buying. For example, it is still unclear whether consumers making emotional response because they are less likely to control their behaviours or consumers are unable to regulate their behaviours because they are emotional buyers. At last, scholars are also encouraged to extend IB knowledge from an evolutionary perspective. For example, studies may test the adaptive and maladaptive difference in IB (Jones and Paulhus, 2011). While a clear understanding of such differences may enhance our understanding of the natures of IB, only a few works have been able to do that so far.

5.4 Managerial Implications

The main aim of the thesis is to provide an integrative effort of previous IB arts, thus the conceptual disarrays and mixed empirical findings can be synergized and our knowledge about impulse buying can be extended. Moreover, the outcomes also provide several practical implications for managerial concerns.

At first, managers should note impulse buying can be in different forms and each may have unique shopping motivations. Such as suggestion impulse buyer may shop for self-imagining and self-esteems while pure impulse buyers may simply seek for shopping enjoyments. Management should be aware of such difference and adjust their business strategies and market communications accordingly and very carefully. At the second place, the role of consumers shall be highlighted over shopping environments. Results of the meta-analysis suggest effects from sensations on impulse buying tendency may depend on the consumer impulsiveness. Enjoyments, rewards and other perceived sensations that are delivered by shopping environments, their influence may subject to consumer's buying impulsiveness. Thus, management should pay attention to their target consumers in terms of an impulse purchase. It is important for them to understand their consumer before setting any market communications.

5.5 Theoretical Contributions

With three integrative work, this thesis offers a comprehensive account on IB concepts and its predictors. In addition, it contributes the theories in consumer research in several ways. At first, it is the first study that introduce the field theory into research of impulse buying and is the first study that constructs a field model of IB, the IB constellation. For such efforts, it complements and extends previous IB conceptual frameworks by inclusion of a relatively comprehensive account and shows the linkages and difference between

different IB forms. At the second place, this study is also the first integrative efforts conducted in line with the 3M model. While previous IB studies apply the 3M in a relatively small sample, such as Sun and Wu (2011), this study tests trait predictors of IBT and IB in a sample of 61,654 participants. Thus, it provides more reliable estimations and is able to appraise the stability and generatability of these predictors across different genders and cultural (Dittmar et al., 1995; Zhang et al., 2010). At the third place, this thesis is also the first study that introduce the General Factor Personality (GFP) and explores the evolutionary basis in study of Impulse buying. A significant and positive relation has been observed from the GFP to impulse buying. On the one hand, the result provides further evidence to support GFP as a personality trait rather than a statistical artifact, on the other hand, it helps to understand the logic of making an impulse buying as it represent one of the ways that individuals acquire socially desired products and resources.

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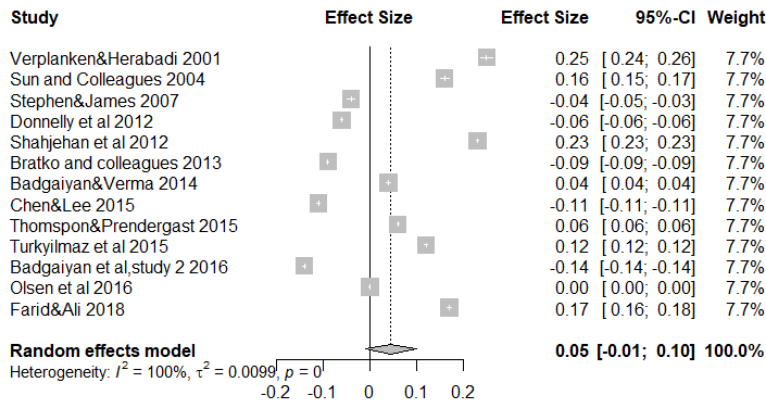
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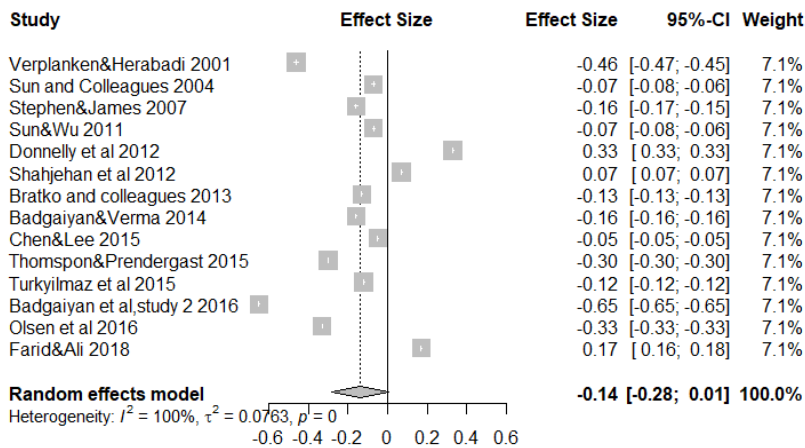
Appendix 1: Forest plots of meta-analysis

Elemental Level → IBT

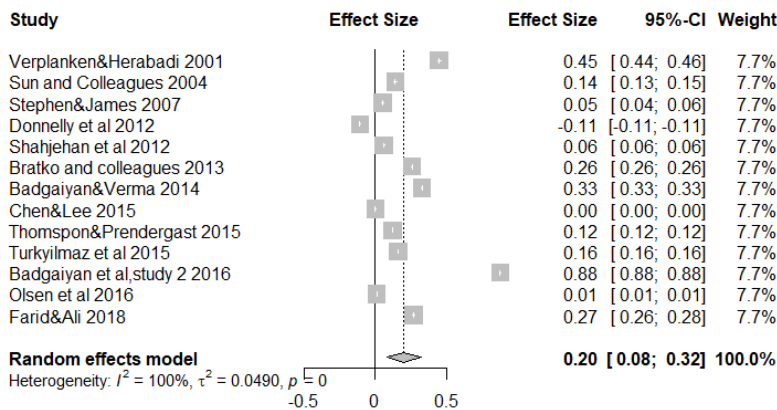
Openness to environments



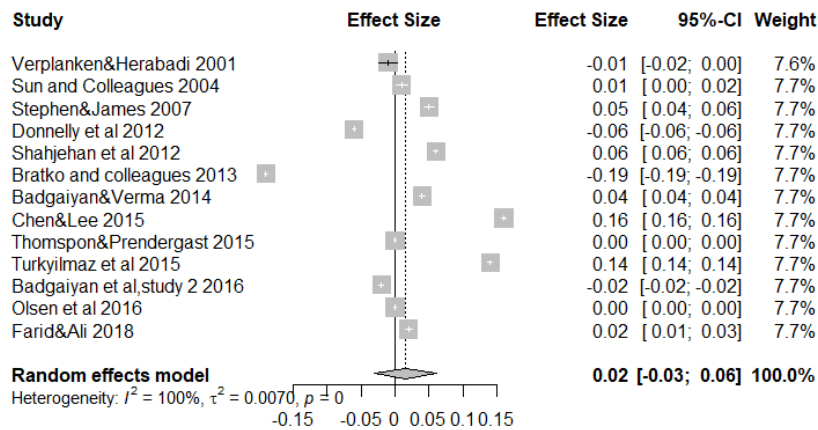
Conscientiousness



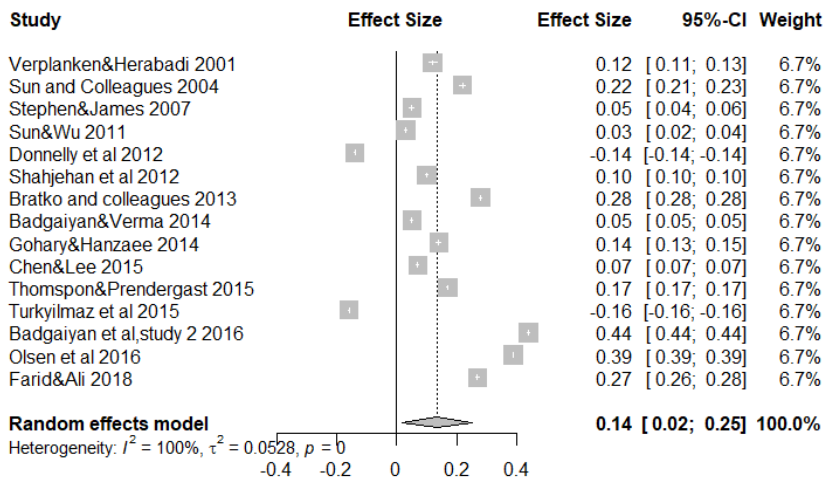
Extraversion



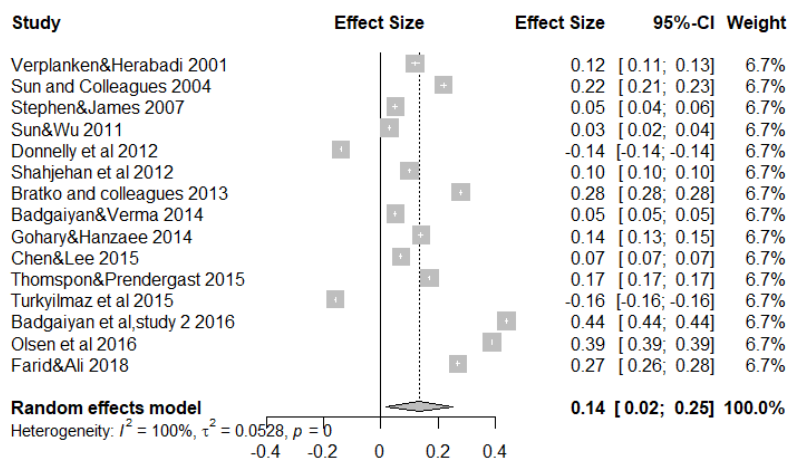
Agreeableness



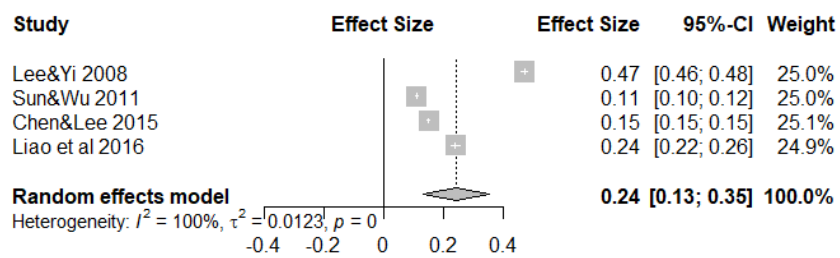
Neuroticism



Materialism

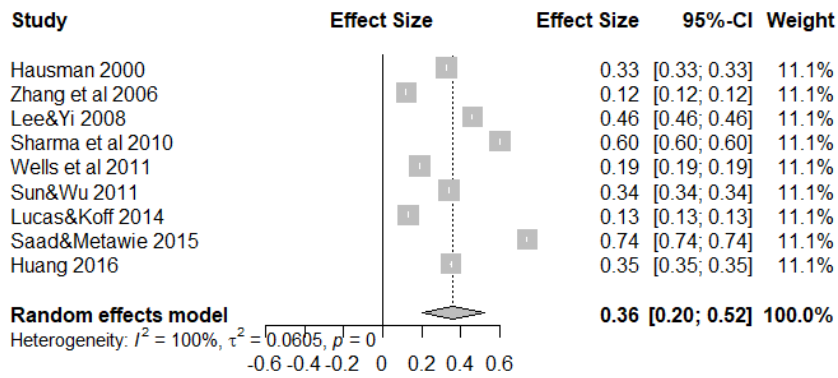


Need for Arousal

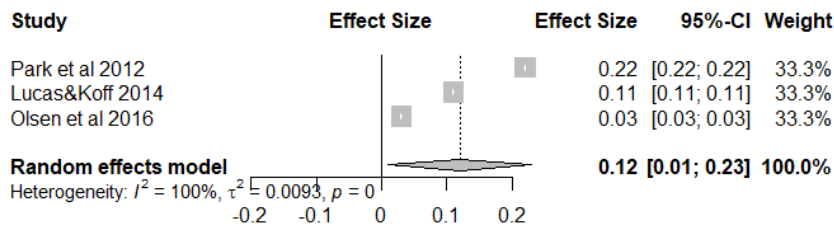


Compound Level → IBT

Impulsiveness

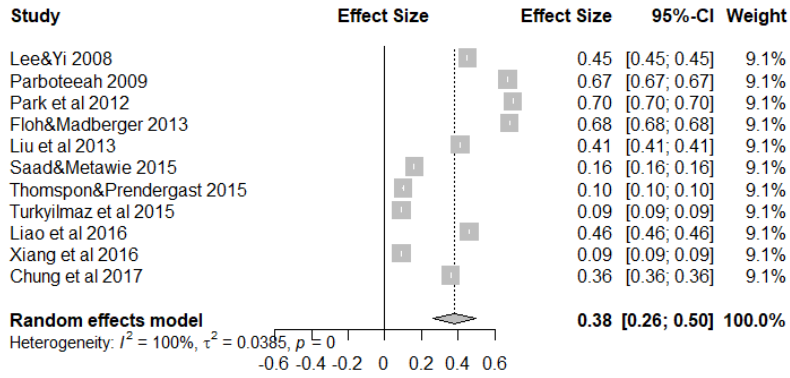


Sensation Seeking

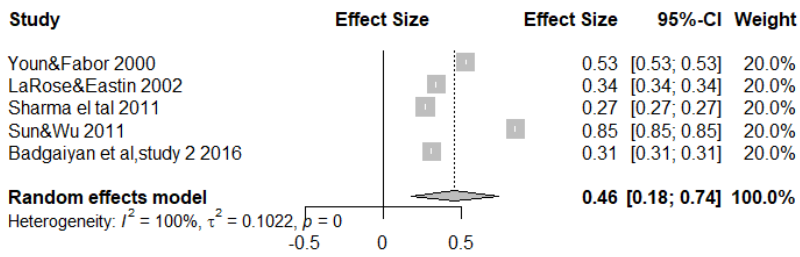


Situational Level → IBT

Shopping Enjoyments

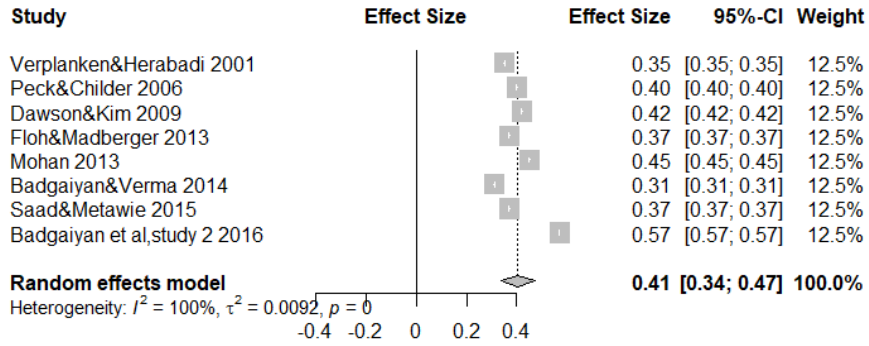


Loss in self-control

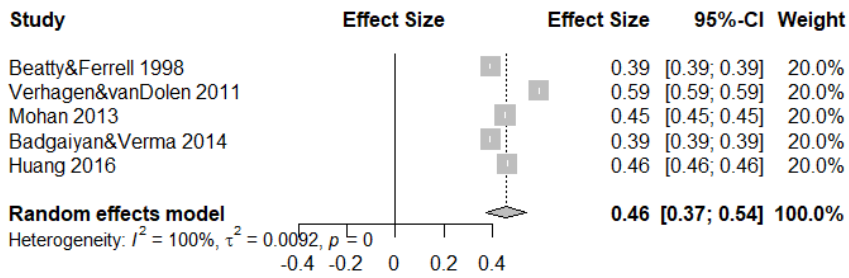


Surface Level → Actual Impulse Buying

Cognitive Impulse Buying Tendency



Affective Impulse Buying Tendency



Appendix 2: Raw Data for Meta-analysis

STUDY	YEAR	SIZE	R	R_V	AGE	GENDER	PD	INCOME	SAMPLE	METHO		MEASUR	CMV
										D	E		
VERPLANKEN&HERABADI	2001	144	0.25	0.0070	40	2	31	na	2	1	2	0	
SUN AND COLLEAGUES	2004	224	0.16	0.0045	20	0	40	0	1	1	2	0	
STEPHEN&JAMES	2007	254	-0.04	0.0040	21	2	40	3	1	1	1	0	
DONNELLY ET AL	2012	936	-0.06	0.0011	36	2	40	0	2	1	1	0	
SHAHJEHAN ET AL	2012	640	0.23	0.0016	25	2	55	0	1	1	2	0	
BRATKO AND COLLEAGUES	2013	678	-0.09	0.0015	19	2	73	0	1	1	3	0	
BADGAIYAN&VERMA	2014	508	0.04	0.0020	25	2	77	2	2	1	1	1	
CHEN&LEE	2015	527	-0.11	0.0019	25	1	58	2	2	1	1	0	
THOMSPON&PRENDERGA ST	2015	842	0.06	0.0012	23	1	68	0	1	1	2	0	
TURKYILMAZ ET AL	2015	612	0.12	0.0016	33	3	66	1	2	1	1	0	
BADGAIYAN ET AL,STUDY 2	2016	508	-0.14	0.0020	25	2	77	2	2	1	2	2	
OLSEN ET AL	2016	1644	0	0.0006	43	2	31	0	1	1	2	1	
FARID&ALI	2018	381	0.17	0.0026	23	1	55	0	2	1	2	0	
VERPLANKEN&HERABADI	2001	144	-0.46	0.0067	40	2	31	0	2	1	2	0	
SUN AND COLLEAGUES	2004	224	-0.07	0.0045	20	0	40	0	1	1	2	0	
STEPHEN&JAMES	2007	254	-0.16	0.0040	21	2	40	3	1	1	1	0	
SUN&WU	2011	381	-0.07	0.0026	22.6	1	40	0	1	1	1	0	
DONNELLY ET AL	2012	936	0.33	0.0011	36	2	40	0	2	1	1	0	
SHAHJEHAN ET AL	2012	640	0.07	0.0016	25	2	55	0	1	1	2	0	
BRATKO AND COLLEAGUES	2013	678	-0.13	0.0015	19	2	73	0	1	1	3	0	
BADGAIYAN&VERMA	2014	508	-0.16	0.0020	25	2	77	2	2	1	1	1	
CHEN&LEE	2015	527	-0.05	0.0019	25	1	58	2	2	1	1	0	
THOMSPON&PRENDERGA ST	2015	842	-0.3	0.0012	23	1	68	0	1	1	2	0	
TURKYILMAZ ET AL	2015	612	-0.12	0.0016	33	3	66	1	2	1	1	0	
BADGAIYAN ET AL,STUDY 2	2016	508	-0.65	0.0020	25	2	77	2	2	1	2	2	
OLSEN ET AL	2016	1644	-0.33	0.0006	43	2	31	0	1	1	2	1	
FARID&ALI	2018	381	0.17	0.0026	23	1	55	0	2	1	2	0	
VERPLANKEN&HERABADI	2001	144	0.45	0.0064	40	2	31	0	2	1	2	0	
SUN AND COLLEAGUES	2004	224	0.14	0.0045	20	0	40	0	1	1	2	0	
STEPHEN&JAMES	2007	254	0.05	0.0040	21	2	40	3	1	1	1	0	
DONNELLY ET AL	2012	936	-0.11	0.0011	36	2	40	0	2	1	1	0	
SHAHJEHAN ET AL	2012	640	0.06	0.0016	25	2	55	0	1	1	2	0	
BRATKO AND COLLEAGUES	2013	678	0.26	0.0015	19	2	73	0	1	1	3	0	
BADGAIYAN&VERMA	2014	508	0.33	0.0020	25	2	77	2	2	1	1	1	
CHEN&LEE	2015	527	0	0.0019	25	1	58	2	2	1	1	0	
THOMSPON&PRENDERGA ST	2015	842	0.12	0.0012	23	1	68	0	1	1	2	0	
TURKYILMAZ ET AL	2015	612	0.16	0.0016	33	3	66	1	2	1	1	0	

BADGAIYAN ET AL,STUDY 2	2016	508	0.88	0.0020	25	2	77	2	2	1	2	2
OLSEN ET AL	2016	1644	0.01	0.0006	43	2	31	0	1	1	2	1
FARID&ALI	2018	381	0.27	0.0026	23	1	55	0	2	1	2	0
VERPLANKEN&HERABADI	2001	144	-0.01	0.0070	40	2	31	0	2	1	2	0
SUN AND COLLEAGUES	2004	224	0.01	0.0045	20	0	40	0	1	1	2	0
STEPHEN&JAMES	2007	254	0.05	0.0040	21	2	40	3	1	1	1	0
DONNELLY ET AL	2012	936	-0.06	0.0011	36	2	40	0	2	1	1	0
SHAHJEHAN ET AL	2012	640	0.06	0.0016	25	2	55	0	1	1	2	0
BRATKO AND COLLEAGUES	2013	678	-0.19	0.0015	19	2	73	0	1	1	3	0
BADGAIYAN&VERMA	2014	508	0.04	0.0020	25	2	77	2	2	1	1	1
CHEN&LEE	2015	527	0.16	0.0019	25	1	58	2	2	1	1	0
THOMSPON&PRENDERGA	2015	842	0	0.0012	23	1	68	0	1	1	2	0
ST												
TURKYILMAZ ET AL	2015	612	0.14	0.0016	33	3	66	1	2	1	1	0
BADGAIYAN ET AL,STUDY 2	2016	508	-0.02	0.0020	25	2	77	2	2	1	2	2
OLSEN ET AL	2016	1644	0	0.0006	43	2	31	0	1	1	2	1
FARID&ALI	2018	381	0.02	0.0026	23	1	55	0	2	1	2	0
VERPLANKEN&HERABADI	2001	144	0.12	0.0068	40	2	31	0	2	1	2	0
SUN AND COLLEAGUES	2004	224	0.22	0.0045	20	0	40	0	1	1	2	0
STEPHEN&JAMES	2007	254	0.05	0.0040	21	2	40	3	1	1	1	0
SUN&WU	2011	381	0.03	0.0026	22.6	1	40	0	1	1	1	0
DONNELLY ET AL	2012	936	-0.14	0.0011	36	2	40	0	2	1	1	0
SHAHJEHAN ET AL	2012	640	0.1	0.0016	25	2	55	0	1	1	2	0
BRATKO AND COLLEAGUES	2013	678	0.28	0.0015	19	2	73	0	1	1	3	0
BADGAIYAN&VERMA	2014	508	0.05	0.0020	25	2	77	2	2	1	1	1
GOHARY&HANZAE	2014	247	0.14	0.0041	26	2	58	0	1	1	1	0
CHEN&LEE	2015	527	0.07	0.0019	25	1	58	2	2	1	1	0
THOMSPON&PRENDERGA	2015	842	0.17	0.0012	23	1	68	0	1	1	2	0
ST												
TURKYILMAZ ET AL	2015	612	-0.16	0.0016	33	3	66	1	2	1	1	0
BADGAIYAN ET AL,STUDY 2	2016	508	0.44	0.0020	25	2	77	2	2	1	2	2
OLSEN ET AL	2016	1644	0.39	0.0006	43	2	31	0	1	1	2	1
FARID&ALI	2018	381	0.27	0.0026	23	1	55	0	2	1	2	0
SUN&WU	2011	381	0.22	0.0019	22.6	1	40	0	1	1	1	0
CHEN&LEE	2015	527	0.21	0.0019	25	1	58	2	2	1	1	0
ATULKAR&KESARI	2018	417	0.89	0.0024	0	1	77	0	2	1	1	0
PODOSHEN&ANDRZEJEWS	2012	538	0.52	0.0019	56	1	40	3	2	1	1	0
KI												
PRADHAN ET AL	2018	421	0.16	0.0024	30	1	77	0	2	1	1	0
THOUMRUNGROJE	2018	659	0.39	0.0015	33	0	50	2	1	1	1	0
LEE&YI	2008	163	0.47	0.0061	25	1	60	1	1	1	1	0
SUN&WU	2011	381	0.11	0.0026	22.6	1	40	0	1	1	1	0
CHEN&LEE	2015	527	0.15	0.0019	25	1	58	2	2	1	1	0
LIAO ET AL	2016	120	0.24	0.0084	20.8	1	40	0	1	1	2	0

HAUSMAN	2000	272	0.326	0.00040	25	2	40	0	2	2	3	0
ZHANG ET AL	2006	294	0.12	0.00048	0	2	40	0	1	1	1	0
LEE&YI	2008	163	0.46	0.00031	25	1	60	1	1	1	1	0
SHARMA ET AL	2010	309	0.6	0.00020	31	1	68	0	2	2	1	0
WELLS ET AL	2011	223	0.19	0.00046	20.9	3	40	0	1	1	1	2
SUN&WU	2011	381	0.341	0.00039	22.6	1	40	0	1	1	1	0
LUCAS&KOFF	2014	232	0.13	0.00048	20.36	1	40	0	1	1	1	0
SAAD&METAWIE	2015	500	0.74	0.00010	27.49	2	70	0	2	1	1	2
HUANG	2016	410	0.35	0.00038	30	2	58	0	2	1	2	0
PARK ET AL	2012	356	0.22	0.00045	21.9	1	60	2	1	1	1	0
LUCAS&KOFF	2014	232	0.11	0.00048	20.36	1	40	0	1	1	1	0
OLSEN ET AL	2016	1644	0.03	0.00050	43	2	31	0	1	1	2	1
LEE&YI	2008	163	0.45	0.00032	25	1	60	1	1	1	1	0
PARBOTEEAH	2009	264	0.67	0.00015	20.7	1	40	0	1	1	3	0
PARK ET AL	2012	356	0.7	0.00013	21.9	1	60	2	1	1	1	0
FLOH&MADBERGER	2013	555	0.68	0.00014	31	1	40	0	2	1	2	1
LIU ET AL	2013	318	0.412	0.00034	22	1	80	0	1	1	1	0
SAAD&METAWIE	2015	500	0.16	0.00047	27.49	2	70	0	2	1	1	2
THOMSPON&PRENDERGA ST	2015	842	0.1	0.00049	23	1	68	0	1	1	2	0
TURKYLMAZ ET AL	2015	612	0.09	0.00049	33	3	66	1	2	1	1	0
LIAO ET AL	2016	120	0.46	0.00031	20.8	1	58	0	1	1	3	0
XIANG ET AL	2016	248	0.09	0.00049	26	1	80	2	2	1	1	2
CHUNG ET AL	2017	332	0.36	0.00038	28	2	60	2	2	1	3	1
YOUN&FABOR	2000	135	0.53	0.00026	27	1	40	0	2	1	1	0
LAROSE&EASTIN	2002	218	0.34	0.00039	22	3	40	0	1	1	1	0
SHARMA EL TAL	2011	381	0.27	0.00043	31	1	68	0	2	1	1	0
SUN&WU	2011	381	0.85	0.00004	22.6	1	40	0	1	1	1	0
BADGAIYAN ET AL,STUDY 2	2016	508	0.31	0.00041	25	2	77	2	2	1	2	2
VERPLANKEN&HERABADI	2001	106	0.35	0.00039	21.55	1	38	0	2	1	1	0
PECK&CHILDER	2006	170	0.4	0.00035	38	1	40	3	2	1	1	0
DAWSON&KIM	2009	302	0.42	0.00034	22	3	40	0	1	1	1	0
FLOH&MADBERGER	2013	555	0.37	0.00037	31	1	40	0	2	1	1	1
MOHAN	2013	720	0.45	0.00032	30	2	77	0	2	1	1	1
BADGAIYAN&VERMA	2014	508	0.31	0.00041	25	2	77	2	2	1	1	1
SAAD&METAWIE	2015	500	0.37	0.00037	27.49	2	70	0	2	1	1	2
BADGAIYAN ET AL, STUDY 2	2016	508	0.57	0.00023	25	2	77	2	2	1	1	2
BEATTY&FERRELL	1998	533	0.39	0.00036	22	1	70	0	1	1	2	0
VERHAGEN&VANDOLEN	2011	532	0.59	0.00021	20	1	38	0	1	1	2	1
MOHAN	2013	720	0.45	0.00032	30	2	77	0	2	1	1	1
BADGAIYAN&VERMA	2014	508	0.39	0.00036	25	2	77	2	2	1	1	1
HUANG	2016	410	0.46	0.00031	30	2	58	0	2	1	2	0

Appendix 3: Raw Data for TSSEM

1 0.43 0.17 0.37 0.21 0.33 0.04
 0.43 1 0.28 0.66 0.25 0.35 0.14
 0.17 0.28 1 0.37 0.37 0.45 0.16
 0.37 0.66 0.37 1 0.34 0.46 0.19
 0.21 0.25 0.37 0.34 1 0.39 0.28
 0.33 0.35 0.45 0.46 0.39 1 0.32
 0.04 0.14 0.16 0.19 0.28 0.32 1

1 0.21 0.07 0.12 0.2 0.1 0.22
 0.21 1 0.23 0.02 0.36 -0.120.23
 0.07 0.23 1 -0.250.08 0.12 0.01
 0.12 0.02 -0.251 0.13 -0.050.05
 0.2 0.36 0.08 0.13 1 -0.070.28
 0.1 -0.120.12 -0.05-0.071 0.16
 0.22 0.23 0.01 0.05 0.28 0.16 1

1 0.09 0.19 0.07 0 -0.08-0.1
 0.09 1 0.14 0.14 0.12 -0.2 -0.25
 0.19 0.14 1 0.21 -0.09-0.17-0.24
 0.07 0.14 0.21 1 0.11 0.03 -0.12
 0 0.12 -0.090.11 1 -0.11-0.04
 -0.08-0.2 -0.170.03 -0.111 0.37
 -0.1 -0.25-0.24-0.12-0.040.37 1

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 0.06 1 0 0.1 0.04 0.01 NA
 -0.010 1 0 0 -0.03NA
 0.02 0.1 0 1 0.1 0.02 NA
 0.02 0.04 0 0.1 1 0.01 NA
 0 0.01 -0.030.02 0.01 1 NA
 NA NA NA NA NA NA 1

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 0.44 1 0.37 0.32 0.3 -0.130.15
 0.45 0.37 1 0.38 0.28 -0.14-0.1
 0.31 0.32 0.38 1 0.37 -0.030.108
 0.19 0.3 0.28 0.37 1 -0.060.017
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 -0.033 0.015 -0.102 0.108 0.017 0.52 1

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0.47 -0.730.53 1 0.63 0.63 NA
0.61 -0.590.47 0.63 1 0.68 NA
0.65 -0.770.6 0.63 0.68 1 NA
NA NA NA NA NA NA 1

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0.13 0.39 1 0.34 0.15 -0.32NA
0.43 0.17 0.34 1 0.46 0.01 NA
0.35 0.11 0.15 0.46 1 0 NA
0 -0.26-0.320.01 0 1 NA
NA NA NA NA NA NA 1

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0.3 0.17 -0.190.15 1 0.3 NA
0.18 0.17 -0.210.15 0.3 1 NA
NA NA NA NA NA NA 1

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0.13 0.1 1 0.23 0.04 -0.21NA
-0.120.02 0.23 1 0.09 0.09 NA
0.13 0.07 0.04 0.09 1 -0.02NA
-0.06-0.31-0.210.09 -0.021 NA
NA NA NA NA NA NA 1

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0.26 1 0.21 0.16 0.22 -0.230.35
0.27 0.21 1 0.18 0.09 -0.150.5
0.16 0.16 0.18 1 0.34 0.09 0.47
0.21 0.22 0.09 0.34 1 0.02 0.29
-0.03-0.23-0.150.09 0.02 1 -0.01
0.38 0.35 0.5 0.47 0.29 -0.011

1 -0.159 -0.127 0.218 0.263 0.207 0.078
-0.159 1 0.13 -0.185 -0.116 -0.46-0.148
-0.127 0.13 1 0.155 -0.099 -0.162 -0.186
0.218 -0.185 0.155 1 0.233 0.137 0.056
0.263 -0.116 -0.099 0.233 1 0.229 0.167
0.207 -0.46-0.162 0.137 0.229 1 0.098

0.078 -0.148 -0.186 0.056 0.167 0.098 1