An investigation of habitual purchasing behavior in grocery shopping using partial least squares structural equation modelling

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A dissertation submitted to Newcastle Business School for the degree of Doctor of Business Administration (DBA)

Date of Submission: 27th October, 2013
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Supervisor’s Name: Professor Dr Dennis Ahrholdt

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Acknowledgements

To my parents, thank you for your ongoing support from the beginning.

To my wife and son, 致美麗的妻子:感謝妳一路的支持與陪伴.因為有妳我才能心無旁騖完成夢想.妳是我創造美好生活的動力來源.再次謝謝妳.給親愛的健虎:等你長大閱讀這篇文章時.你會明白你的體貼懂事讓爸爸以你為榮.

To my supervisor, Professor Dr Dennis Ahrholdt, Es war mir eine grosse Freude, mit Ihnen zusammen gearbeitet zu haben. Die Fähigkeiten, die ich durch Sie erlangt habe, vor allem das kritische Denken, welches Sie mir beigebracht haben, wird mir sehr dabei helfen, meinen zukünftigen Weg zu gestalten. Ich bin mir sicher, es verleiht mir das Potential eine erfolgreiche Kariere erleben zu dürfen und dafür mochte ich mich herzlichst bei Ihnen bedanken.
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Abstract

Retailer marketing expenditure is significant, yet it is increasingly apparent that consumer decision-making is determined by factors beyond the direct influence of marketing campaigns. This study is focused on the development of a model of habitual grocery purchasing behavior and the identification of factors that influence non-conscious purchasing. To identify the drivers, symptoms of the behavior are measured directly. By basing the model on the Stimulus-Organism-Response framework and analysing data using partial least squares structural equation modelling, factors that influence habitual grocery purchasing behavior are identified. An importance-performance analysis highlights particular factors controlled by the retailer, that if improved will increase engagement in habitual grocery purchasing behavior. As a result managerial insights are developed that are based on the driving factors of the non-conscious purchasing behavior.
1. Introduction

In 2012 the Australian grocery retail market had annual revenue of AUD$85 billion with growth from 2013 to 2017 expected to average 3.9% and turnover to reach AUD$103 billion (BMI, 2013). Comparatively however, the Australian grocery retail market is small. Revenue from US and European grocery retail markets generated USD$783 billion and USD$770 billion respectively in 2012, with growth up to 2017 anticipated to average between 4.3% to 4.6% and revenues to grow to USD$977 billion and USD$950 billion (BMI, 2013). The Australian grocery retail market is currently controlled by a duopoly, with retailers Woolworths and Coles accounting for 70% of the market (BMI, 2013). Both Woolworths and Coles are locked in an ongoing price war in an effort to increase market share, further restricting new market entrants. However, pricing wars involving price cuts have consequences for both retailers and consumers, with margins diminishing and consumers expecting continued low discounted prices (Heil and Helson, 2001; Urbany and Dickson, 1991), a phenomena observed across markets worldwide (Verhoef et al., 2009; Heil and Helson, 2001).

Retailing strategy literature is extensive, and often focuses on factors that managers can use to encourage patronization and positive perceptions as a means to increasing turnover. Besides factors that are controlled by retailers (e.g. marketing signals such as price promotions, product range and in-store design elements) increasingly research is supposing that consumer purchase behavior and decision-making is influenced by factors beyond the direct control of retailers (Spaanjard, Freeman, and Young, 2011; Spaanjard and Freeman, 2012; Steidl, 2012). For example, Spanjaard, et al., (2011) observed in their videographic study that 41% of consumers within a grocery store engaged in habitual purchasing. Habitual purchasing behavior is observable through
minimal time spent in product selection and engagement with alternatives during the purchase decision. Habitual purchasing behavior occurs as a result of low consumer arousal and minimal emotional involvement associated with the grocery shopping. The repetitive decision-making style displayed by consumers purchasing habitually suggests that judgments during the purchase decision occur non-consciously, indicating that the retailers ability to influence purchase decisions might consequently be diminished.

In general repetitive non-conscious behaviors can account for between 45% to 50% of individual’s regular daily activity (Wood and Neal, 2009; Martin and Morich, 2011). By applying Spaanjard et al., (2011) observation that 41% of consumers shop habitually to the context of the Australian grocery market suggests approximately AUD$35 billion in revenue in 2012 could be considered generated through consumer behavior that is habit based and fundamentally driven by non-conscious behaviors. Combined, habitual behavior in the US and European markets could account for over USD$890 billion in revenue, or equivalent to approximately 90% of Australian GDP in 2012 (CIA, 2013).

Habits support habitual purchasing by facilitating the consumer to engage in repetitive routines. East et al., (1994) in an investigation of habit in shopping times, observed that shoppers undertake grocery shopping at times and days dependent on constraints from their environment and life. Their results indicate that consumers seek to maximize convenience with regard to preferred shopping times for completing the grocery shopping. Positive feedback received by the consumer through efficient task completion (e.g. from the maximization of convenience) encourages the establishment of routine and habit (Wood and Neal, 2009). Within the context of this study, the maximization of convenience displayed in East et al.’s., (1994) study regarding habit in shopping
decisions is consistent with the notion of the consumer developing routinized behavior to achieve a task driven goal, the completion of the grocery shopping.

As a consequence of the importance of habitual purchasing in retailing, retail managers need to understand factors that shape non-conscious behavior in order to optimize their investment in marketing strategies. Although habitual purchasing behavior has gained recent attention (Spanjaard et al., 2011; Spanjaard and Freeman, 2012; Steidl, 2012) according to the authors knowledge the scientific literature with regard to habitual purchasing behavior, particularly in the context of grocery shopping, is sparse. Whilst Spanjaard et al., (2011) develop a categorization of purchasing behavior through video observation the authors do not identify factors that encourage the observed habitual purchasing. Similarly, Martin and Morich (2011), propose a theoretical model for how consumption decisions are made non-consciously but without empirically testing their approach while Wood and Neal (2009) discuss habit measurement more generally (such as voting and prediction of everyday behavior) rather than the measurement of habit in consumer behavior. As a consequence, the present work helps to fill the presented gap in the literature in that it seeks to investigate the drivers of habitual grocery purchasing behavior and observable symptoms of habitual grocery purchasing behavior to provide insights for retailing managers.

By considering the habitual behavior observed by Spaanjard et al., (2011), the present study is built by initially defining habitual grocery purchasing behavior as involving the repetitive purchase of grocery products based on habit (Wood and Neal, 2009; Ji and Wood, 2007). Grocery shopping by nature is considered a routine habit driven task that normally requires minimal cognitive engagement for decision-making (Spaanjard et al., 2011). During habitual purchasing the consumer is supported by a range of non-
conscious processes that require minimal cognitive engagement and emotional involvement (Spanjaard et al., 2011; Bargh, 2002; Murray and Haubl, 2007). The non-conscious processes are elicited by the environment of the supermarket and manage the habit driven task (Wood and Neal, 2009).

To explain habitual purchasing behavior and develop a model of factors driving the behavior the present work draws on Helson’s (1964) and Esbjerg et al.,’s (2012) research that demonstrates the role of adapted or learned judgment scales in individuals. For the consumer adapted judgment scales represent an amalgamation of past experiences with a retailer developed overtime through experience and held within long-term memory. Through lab-based research, Suri and Monroe (2003) and Estelami (2002) observed that consumer working memory and general cognitive capacity during retailing situations is limited. As a consequence of these cognitive decision-making deficiencies a consumer habitually purchasing grocery products relies on non-conscious adapted judgment scales enacted from long-term memory and facilitated by mental imagery (a process that relies on visual and multi-sensory inputs for the development of subjective assessments about an object (Marks, 1999; Stern and Zinkhan, 2001)). Non-conscious adapted judgment scales support habitual consumption by linking previous consumption experience to the current situation. The non-conscious adapted judgment scales support the consumer in the management of the multitude of purchase decisions associated with choosing products to place in their basket.

Consumer mental imagery acts as a heuristic and is formed through perception of marketing signals (Stern and Zinkhan, 2001). The role of mental imagery in consumer behavior is well established within the literature. Esbjerg et al., (2012) for example develop a ‘store image’ construct based on consumer experience and expectations,
whilst Reardon et al., (2011) similarly based their ‘store image’ construct on six factors focused on retailer perceptions. Zielke (2006; 2010) considers a ‘price image’ resulting from five factors that are derived primarily from perceptions of value directly related to the price cue. For the habitual consumer, mental imagery represents an array of associations related to a retailer (Zielke, 2010) which reduce cognitive stress associated with evaluations and purchase decisions (Murray and Haubl, 2007; Estelami, 2003). When engaged in habitual purchasing as observed by Spanjaard et al., (2011) the consumer therefore is relying on non-conscious assessments supported by judgment scales enacted by the consumer’s mental imagery, rather than unique and strong cognitively involved evaluations at the point of purchase.

In a holistic manner, the framework developed in this study proposes that a consumer habitually purchasing holds a mental ‘overall value image’ of the retailer they frequent the most for groceries that is derived from two factors (i.e., retailer value image and in-store value image) related to perceptions of the retailer. These two dimensions relate to the tangible designed aspects of the in-store environment (Turley and Milliman, 2005; Baker et al., 2002), and a retailers market positioning signals and price cues (Kirmani and Rao, 2008; Monroe, 2011).

The dynamics of the in-store social environment (Argo, Dahl and Manachanda, 2005; Wakefield and Inman, 2003), and a consumer’s situational perception of time pressure (Suri and Monroe, 2003, Park et al., 1998) are similarly hypothesized as two factors that subsequently influence and strengthen engagement in habitual purchasing behavior however originate from the consumer. The factors of the social environment and time pressure facilitate a reliance on the overall value image for value assessments during the purchase decision. The present study incorporates the two factors of the overall value
image (i.e., retailer value image and in-store value image) into a model that includes the two additional factors focused on unique aspects of the consumer (i.e., in-store social environment and time pressure) and treats these four factors as stimuli for habitual grocery purchasing behavior. The approach of differentiation in drivers allows for greater clarity on the strength of experience and perceptions associated with the retailer by the consumer. The distinction between retailer controlled and personal factors presents an opportunity to develop more holistic understanding of habitual grocery purchasing behavior for marketing strategies.

The conceptual basis to defining the four habitual grocery purchasing behavior driver constructs of the shopping experience draws on research that empirically measures variation in consumer purchase behavior. For example behavior’s such as unplanned (Iyer, 1989) and deferred purchasing (Dhar and Nowlis, 1999) demonstrate the outcome of consumer frustration. Similarly, reduced attribute processing (Suri and Monroe, 2003) and minimal search efforts (Park, Iyer, and Smith, 1989) are behavioral aspects associated with habitual purchasing. Literature focused on consumer perceptions of store quality and resulting intentions to patronize (Baker et al., 1994; Baker et al., 2002) provide insight as to value assessments made by a consumer about a retailer not necessarily directly related to price.

The model of habitual purchasing behavior and the habitual purchasing explanatory model, respectively, is embedded within the stimulus-organism-response (Mehrabian and Russell, 1974) framework (S-O-R). The S-O-R framework considers environmental stimuli to act upon the state of an organism such as to create a change in the organism’s state, observed as a response behavior. The S-O-R framework provides a mechanism through which to arrange the influence of the four habitual grocery purchasing driver
constructs identified to influence consumer grocery shopping experience and purchase behavior. The domains of S-O-R enable analysis of the four factors (the retailer value image, in-store value image, social environment and time pressures) as ‘driving’ stimuli facilitating habitual purchasing (the response domain). The application of the S-O-R framework to consumer behavior situations is well established. Belk (1975) conceptualised stimuli affecting the consumer as divided between object (tangible) and situation (in-tangible), whilst Bitner (1992), Baker et al., (2002), Fiore and Kim (2007) applied the framework to demonstrate the influence of in-store stimuli such as store design, layout and atmospherics on purchase behaviors. In advancing the conceptual basis for the application of the S-O-R framework, Jacoby (2002) proposed an overlapping sequence of domains, with each domain representing a particular sequence of non-conscious behaviors. The S-O-R framework has also been applied to examine the antecedents of customer satisfaction (Esbjerg et al., 2012) and customer experiences (Verheof et al., 2011) in bricks-and-mortar retailing as well as less traditional environments such as online purchasing (Park and Lennon, 2008; Eroglu, Machleit and Davis, 2003).

Within the “Organism” domain in the S-O-R framework, several interdependent processes are assumed to take place that facilitate habitual purchasing. Fundamentally these are the enactment of mental imagery and scripts related to the retailer that guides consumer behavior and value assessments. The enactment of mental imagery and scripts result as a consequence of the perception of environmental stimuli determined through a process of perception referred to as pre-attentative analysis (Velmans, 1999). Scripts act to frame perception (Marks, 1999; Erasmus et al., 2002), and consumer focus during habitual consumption.
In extending the conceptual basis for the model of habitual grocery purchasing behavior it is argued that the four constructs of the shopping experience elicit or encourage the reliance on non-conscious adapted judgment scales that are held within a consumer's long-term memory (Esbjerg et al., 2012; Bruggen et al., 2011). Retailer controlled factors such as market positioning and price cues and the in-store environment enact judgment scales from an overall value image of a retailer. Factors unique to the consumer, such as the consumer's experience with the social environment and time pressures, contribute toward consumer reliance on judgment scales and non-conscious value assessments made during the purchase decision. Through the processes of adaptation and pre-attentative analysis (Helson, 1964; Russell and Lanius, 1984; Monroe, 1971a; Marks, 1999) judgment scales non-consciously to manage consumer value assessments facilitating low cognitive engagement in purchase decisions.

The formative drivers modeled within the S-O-R framework concurrently influence a consumer’s affective state through arousal and pleasure (Mehrabian and Russell, 1974). The parallel relationship between arousal and the affective state encourages reliance on non-conscious or automated processes (Martin and Morich, 2011) which support the habitual purchasing behavior observed by Spaanjard et al., (2011). The model of habitual grocery purchasing behavior within the S-O-R framework is presented in Figure 1.1.
To quantitatively examine the developed model, data (n=155) were collected through an online survey. Thereby, the focal object was the respondent’s most frequented, and thus familiar, supermarket. The data were analysed using Partial Least Squares structural equation modeling (PLS-SEM).

The results support, firstly that retailers are able to facilitate habitual purchasing through market positioning and product price cues that can result in perceptions such as certainty in value and odd-ending prices, and secondly that the consumer perception of the social environment associated with grocery shopping positively influence habitual grocery purchasing behavior. To develop further insights, considering the relevance for both researchers and managers of comparing the importance of measures controlled by the retailer and factors unique to the consumer, an importance-performance analysis was conducted (Martilla and James, 1977; Ahrholdt, 2011).
The major contribution of the present work to the literature is the operationalization of a model for empirically measuring habitual grocery purchasing behavior conceptualized within the S-O-R framework. This has two benefits; firstly empirically providing insight into the antecedents of habitual grocery purchasing, a consumer behavior that potentially has significant economic implications for retailers; and secondly by developing an S-O-R framework that is integrated with physiologically based theories such as adaptation-level theory and pre-attentative analysis.

All in all the contributions of the present work are:

1. The development of a holistic model to explain habitual grocery purchasing behavior;
2. The identification and empirical analysis of driver constructs and formative operationalization of these driver constructs;
3. The development of a reflective measurement approach for habitual grocery purchasing behavior;
4. The integration of the S-O-R framework and adaptation-level theory with the inclusion of conceptual advances in perception such as pre-attentative analysis;
5. The finding that certainty in value and odd-ending prices, along with the social environment, influence habitual purchasing behavior rather than low prices, the in-store environment or time pressures.

The rest of the study is organised as follows: first, it is proposed and discuss the theoretical framework of habitual purchasing behavior that integrates the stimulus-organism-response and adaptation-level theories in more detail, and substantiate the relevant concepts and assumptions used to sustain the framework. Secondly, the structural relationships within the model in figure 1.1, along with associated
measurement models are developed. After explanation of the methodological approach, the quality of survey data and the main results are presented, followed by a detailed discussion of the theoretical and managerial implications. This includes avenues for future research as well as identified limitations to the measurement and modeling approach used.
2. Conceptualising habitual purchasing behavior within the Stimulus-Organism-Response (S-O-R) framework.

2.1. Foundations of the Stimulus-Organism-Response model to explain habitual grocery purchasing: the role of pleasure and arousal in retailing contexts

In this work, the theoretical framework to develop a model to explain habitual grocery purchasing behavior is based on the Stimulus-Organism-Response (S-O-R) paradigm established through Mehrabian and Russell’s (1974) work in environmental psychology. Originally considered as a framework for understanding an individual’s reactions to different dimensions of an environment (Russell and Lanius, 1984), the paradigm organises the casual effects of stimuli leading to an individual’s behavior via elicitation of particular states within an organism. As discussed in chapter 1, the application of the S-O-R framework to consumer behavior situations is well established.

Mehrabian and Russell’s (1974) paradigm has the environment as providing stimuli for the elicitation of both cognitive and affective states within an individual that lead to a behavioral response dependent on the strength of the stimuli. A consumer’s cognitive state as such represents the depth of thoughts or perceptions formed through direct interaction with products (or an environment), and the resulting strength of rational assessments toward future outcomes of the purchase (Bechara and Damasio, 2005). Minimal assessment of product selection and concern regarding the product therefore indicates a low level of cognitive engagement. The affective state (interchangeably referred to as emotion in the marketing literature (Fiore and Kim, 2002)) of a consumer can be thought of as the consumer’s favorable or otherwise disposition toward a stimuli (e.g. a product or brand) (Batra, 1986 cited in Fiore and Kim, 2002, p.g. 428). A positive and favorable disposition toward a product is likely to encourage commitment,
whilst the intensity of the disposition has been found to be dependent on the closeness (or involvement) of the consumer to the product (Chaudhuri and Holbrook, 2001; Shiv and Fedorikhin, 1999).

Whilst limited in comprehensiveness and subtly, two of the three basic affective response dimensions (processes which occur within the organism e.g. consumer), pleasure and arousal (Mehrabian and Russell, 1974) are considered appropriate in understanding the role of the supermarket environment on the consumer’s affective state (Fiore and Kim, 2007). An individual’s dimension of arousal represents how alert and ready to respond they are with the dimension ranging from the polar states of coma to frantic hysteria (Berlyne, 1960, cited in Mehrabian and Russell, 1974, p.g.15). Mittal and Lee, (1989) and Kalcheva and Weitz (2006) found environmental complexity and arousal to be inversely correlated (i.e. the higher the environment’s complexity, the lower the level of consumer arousal), whilst pleasure and arousal were generally positively correlated. Pleasure is often expressed through feelings and moods (Mehrabian and Russell, 1974).

The dimensions of pleasure and arousal provide the basis for Fiore and Kim’s (2007) conceptual integration of utilitarian and hedonic experiences in shopping. The difference between utilitarian and hedonic experiences fundamentally is determined by how the consumer considers the purchase situation as either solving a specific purpose, or providing a level of enjoyment (Park and Moon, 2003). Drawing on Babin et al., (1994) and Park and Moon (2003) the present study considers utilitarian value of a product as determined by consumer perception of the products capability to be used to solve a specific problem (or household requirement). This is opposed to hedonic value where anticipated value results from eliciting of a satisfying feeling of pleasure
(hedonic function) for the consumer. The purchase decision for grocery products, which are generally fast moving consumer goods normally occurs with low situational involvement (Wakefield and Barker, 1998; Michaelidou and Dibb, 2008) and is driven by a need that is mostly utilitarian in nature.

Fiore and Kim (2007) include the third affective dimension of dominance in their conceptual framework. The dimension is a measure of how physically unrestricted and in control of a situation that an individual feels (Mehrabian and Russell, 1974; Fiore and Kim, 2007). However, Fiore and Kim note that the small amount of empirical support in general for the dominance dimension shows dominance to be a strong predictor of consumer affect (Ward and Barnes, 2001). Kalcheva and Weitz (2006) though do not include the dimension of dominance in their study on motivational orientation and in-store arousal due to what they considered to be a lack of previous empirical support. The present study takes a similar approach to Kalcheva and Weitz (2006) in using pleasure and arousal as explanatory concepts for processes that occur within a consumer, in this case to encourage habitual purchasing and do not conceptualize dominance as an explanatory concept in the conceptual model.

Considering the relevance for pleasure and arousal for habitual purchasing behavior, it is crucial to clarify that the arousal level stimulated by the environment varies depending on the individual (Michaelidou and Dibb, 2008). The level of arousal is not necessarily consistent among individuals engaged in habitual purchasing, though low arousal and pleasure are considered as typical. Retailers achieve a low arousal environment through a variety of techniques; for example by associating in-store colors with branding and using soft or quiet background music (Kalcheva and Weitz, 2006).
In comparison, a high-arousal environment such as an apparel store (Kaltcheva and Weitz, 2006) stimulates higher levels of arousal through an energetic environment (e.g. loud up-tempo music, contrasting lighting and colors etc). Fundamentally an environment that the consumer considers safe and at least mildly pleasant will encourage patronization (Helson, 1964; Ward and Barnes, 2001). It is argued that for habitual grocery purchasing behavior, the particular mix of low arousal and pleasure elicited fundamentally leads to a reduction in the cognitive state that becomes associated by the consumer with grocery shopping.

In applying the S-O-R paradigm to habitual grocery purchasing behavior, the present study considers stimuli influencing arousal and pleasure to low levels during habitual purchasing. Stimuli are derived from factors controlled either through retailer strategy (e.g. through marketing signals such as market positioning activities and product price cues and the in-store environment) or factors specifically related to the consumer (such as the influence of the social environment of the grocery store or perceptions of time pressure).

The purchase decisions that lead to habitual purchasing behavior are encouraged by a reliance on non-conscious value assessments as a mechanism for efficient task completion. The non-conscious value assessments are elicited by the environment of the supermarket and manage the habit driven task (Wood and Neal, 2009).

2.2. The Response: The information environment of the supermarket facilitating habitual purchasing through low arousal

The basis for the grocery shopping experience is the interaction between the retailer and the consumer. Supermarkets contain an array of over 40,000 branded and arranged
products (Block and Morwitz, 1989; Martin and Morich, 2011), a large majority of which represent a purchase decision that is considered inexpensive, routine and of a low involvement nature for the consumer (Mittal and Lee, 1989). The drivers of the habitual purchase decision are derived from three distinct factors; type of purchase and purchase situation (e.g. routine vs emergency), level of motivation toward the purchase situation (e.g. utilitarian vs hedonic experiences that result from associated levels of arousal and pleasure in solving a specific problem or need), and the care taken in relation to brand and product choice (e.g. perception of risk) (Michaelidou and Dibb, 2008). Combined these three factors determine the level of involvement in the purchase decision (Michaelidou and Dibb, 2008, p.g. 16). A consumer engaged in habitual grocery purchasing behavior than has a low level of involvement because of the routine nature of grocery shopping, the low levels of arousal and pleasure associated with the shopping task, and the minimal risk attached to product purchases (e.g. products are generally inexpensive).

To facilitate consumers’ purchase decisions, the retailer provides additional information to consumers as stimuli regarding product value and price beyond what would be required with the purpose of encouraging consumption. With over 40,000 branded and arranged products in-store (Martin and Morich, 2011) it is argued that the overall information environment within a grocery store is complex as a result of the level of information stimuli being presented to the consumer. For example, by providing additional information on products and displays and through the presentation of complex price cues (e.g., odd-ending prices or semantic price cues) the retailer creates a large volume of contextual information for the consumer to consider during the grocery shopping experience. The magnitude and volume of information presented during the grocery shopping experience is termed the information rate of the environment
(Mehrabian and Russell, 1974). The information rate of the supermarket environment is high and complex because of the volume of contextual information.

Results on the influence between the information rate and a consumer’s level of arousal have generally been consistent with low arousal associated with low pleasure (Mittal and Lee, 1989; Kalcheva and Weitz, 2006). Yet as noted by Martin and Morich (2011) the average shopper needs just 25 minutes to identify and purchase 30 items (p.g. 488). Considering the limited cognitive capacity of consumers (Suri and Monroe, 2003; Estelami, 2002; and Coulter, 2002) and the low level of arousal and pleasure associated with habitual purchasing behavior, intensive rational consideration of each purchase decision and possible purchase alternatives seems implausible. Rather, as a result of the complexity of the information rate (Mehrabian and Russell, 1974) the level of stimuli within the retailing environment breaches an optimal threshold for cognitive engagement. This breach reduces the consumer level of arousal and encourages a reliance on non-conscious behaviors (Spanjaard et al., 2011) making the cognitive state of the consumer redundant in purchase decisions. In other words, the complexity of today’s grocery shopping environment has increased to the point where the consumer ‘ignores’ and ‘filters’ information to achieve task completion (Verplanken and Wood, 2006).

The grocery shopping by its nature is thus considered a routine habit driven task that requires minimal cognitive engagement for decision-making (Spanjaard et al., 2011) with the repetitive purchase of grocery products through habit (Wood and Neal, 2009; Ji and Wood, 2007) at the foundation of the task. During habitual purchasing the consumer is supported by a range of non-conscious value assessments and behaviors that require minimal cognitive engagement and emotional involvement (Spanjaard et
al., 2011; Bargh, 2002; Murray and Haubl, 2007). The non-conscious value assessments and behaviors elicited while grocery shopping help to manage the habit driven task (Wood and Neal, 2009) and are associated with a low level involvement. Habitual purchasing observed by Spaanjard et al. (2011), demonstrates the role of non-conscious purchasing behavior as providing an efficient mechanism to support task completion.

2.3. The Organism: Specifying non-conscious processes that facilitate habitual grocery purchasing behavior

2.3.1 Pre-attentative analysis of environmental stimuli and the role of mental scripts and imagery in adaptation

An individual’s perception of environmental stimuli (e.g. for a consumer stimuli experienced during the grocery shopping) is managed through the process of pre-attentative analysis and a sequence of biological and physiological adaptations (Velmans, 1999; Damasio, 2003). As discussed by Velmans (1999), pre-attentative analysis occurs as the brain unconsciously pre-screens stimuli (received for example through visual, olfactory and touch senses) to determine which stimuli enter into conscious awareness. The process of pre-attentative analysis occurs between 0 – 200ms of the stimuli non-consciously engaging the individual (Velmans, 1999; Baars, 1997). To illustrate the concept of pre-attentative analysis, Velmans (1999) refers to the phenomena of a crowded room whereby background conversations are ‘tuned out’ in comparison to the focal conversation yet still sub-consciously analysed and judged for relevance. Similarly, consider the body’s acute yet immediate awareness of the difference between mild and hot water as observed by the rapid and non-conscious removal of ones hand from a vessel of hot water. The process of pre-attentative analysis
results in an immediate protective reaction from the body to minimize the threat. Consciously considering the temperature of the water can be a process that takes longer in conscious awareness if an individual is not focused on assessing the water temperature at the time. However, the optimal threshold between non-conscious and conscious awareness, and subsequent cognitive engagement, varies between individuals dependent on the extent that their awareness of the environment is moderated by personal factors such as strong attitudes or underlying disorder’s (Fitzsimons et al., 2002).

Fundamentally the process of pre-attentative analysis occurs in the brain to manage an individual’s perception. Pre-attentative analysis enables the matching of relevant external stimuli against internally held schemata to traces of similar stimuli mapped through experience (i.e., adaption) (Velmers, 1999; Damasio, 2003). This process helps to determine an individual’s conscious perception. Mental schemata and scripts reside within an individual’s long-term memory and serve as a frame of reference for easy interpretation of perception (Erasmus et al., 2002). The role of mental schemata is to categorize behavior at a higher level compared to mental scripts which represent a sequence of explicit predetermined behaviors (Block and Morowitz, 1999; Erasmus et al., 2002). The classic concept of the mental script is that the individual holds a schedule of learned and sequential behaviors that lead to the accomplishment of a task in an automated nature, a function originally defined in similar terms to computer programming and likened to ordering a meal at a restaurant (Abelson, 1981; Erasmus et al., 2002). Iyer (1989) defines scripts as “a coherent mental representation that aids the collation of incoming information... thereby influencing behaviors” (p.g.42). Similarly, Block and Morowitz (1999) and Erasmus et al., (2002) define scripts as mental structures that are based on past experiences, held within long-term memory and event
specific. Mental scripts therefore facilitate behavior non-consciously to guide the consumer within the store environment by contributing to the comprehension of stimuli (Erasmus et al., 2002; Block and Morowitz, 1999).

The activation of scripts assists the consumer by guiding their overall behavior through the shopping event and placing cognitive parameters around non-conscious behaviors (Erasmus et al., 2002). The continuous sequence of adaptation as will be discussed in section 2.3.2 and the adjustment of judgments of appropriate behaviors based on experienced outcomes (Helson, 1964; Marks, 1999) results in appropriate situational behaviors manifesting (Nordfält, 2009; Block and Morowitz, 1999; Erasmus et al., 2002; Argyriou, 2012).

When schemata, and subsequently scripts are non-consciously enacted, conscious mental imagery even though fleeting and ephemeral, are elicited to support the behavior. Fundamentally mental imagery provides the competence to make appropriate and continuous assessment of stimuli as perceived (Marks, 1999). The use of mental imagery is well established in the marketing literature (Zielke, 2006; Stern and Zinkhan, 2001; Reardon, et al., 2011) and is generally associated with eliciting imagery from long-term memory. Mental imagery is also recognized as a support mechanism for the mental rehearsal of actions, for example as a performer conducts prior to a concert (Marks, 1999). By conceptualising mental imagery as a conscious experience within a consumer, this recognizes the role of imagery in influencing affect (Marks, 1999). This is inline with the qualitative nature of how consumers make value assessments, such as ‘priced reasonably’ and ‘a bargain’, assessments that are elicited from long-term memory about a product when cued (Monroe and Lee, 1999).
Fundamentally, the role of mental imagery is to ‘match’ current perceptions with prior experience held in long-term memory (Marks, 1999). Through the process of ‘matching’, mental imagery facilitates a reliance on scripts to determine behavior. It is argued that elicited ‘mental images’ of a retailer represent an overall value image of the retailer held by a consumer that is a result of implicit and subjective assessments previously made by a consumer. As a result of the activation of scripts during the shopping experience, a consumer habitually purchasing is able to non-consciously rely on an overall value image for the array of purchase decisions made during familiar grocery shopping events. Conscious mental imagery facilitates a reliance on the overall value image by rapidly matching stimuli with previous experiences implicitly held as qualitative judgments in long-term memory. Fundamentally, it is argued that habitual consumption is encouraged when the strength of the overall value image regarding a retailer is strong and associated with favorable value. Consumer perception of value is often operationalized through measures of utility or value for money (e.g. Cronin et al., 1997; Teas and Agarwal, 2000). Value is also conceptualized as “consumer’s overall assessment of the utility of a product based on perception of what is received and what it is given” (Zeithaml, 1988, p. 4). This includes all the give (e.g., payment/effort) and take (e.g., quality) aspects together (Zeithaml 1988; Cronin et al. 1997; Teas and Agarwal 2000).

For a consumer completing grocery shopping out guided by habit, stability in stimuli related to the shopping experience enables the consistent elicitation of mental scripts and imagery. The consistency of elicitation of mental scripts and imagery enables the adaptation required for non-conscious purchasing behavior (Marks, 1999; Zielke, 2006; Stern and Zinkhan, 2001; Reardon, et al., 2011; Nordfalt, 2009; Block and Morowitz, 1999; Erasmus et al., 2002; Argyriou, 2011) as associated with habitual purchasing.
In this work the incorporation of pre-attentative analysis into the model of habitual grocery purchasing behavior provides a psychological grounding for understanding the mechanics of perception of a consumer habitually purchasing within a supermarket environment. To integrate pre-attentative analysis with the S-O-R framework, the process of value-based judgments required for purchasing is conceptualized within adaptation-level theory (Helson, 1964).

2.3.2 Adaptation-level theory and the role of judgment scales supporting habitual consumption.

Adaptation-level theory (Helson, 1964), which explains the variation in an organism’s behavior (e.g. the consumer) resulting from a stimuli can be used to conceptualise the decision-making process associated with habitual purchasing behavior within a supermarket. Fundamentally, this is due to adaptation-level theory supporting the conceptualization of non-conscious judgments occurring based on implicit judgment scales.

According to Helson (1964) an individual’s perception and subsequent judgment of stimuli is a dynamic process resulting from “internally and externally initiated energies moving around an internalised point of equilibrium” (pg. 53). The point of equilibrium (or adaptation) he argued represented an internalised ‘steady state’ of perception that is not currently disrupted by external stimuli (Helson, 1964, pg. 64). The point of equilibrium occurs along an implicit judgment scale developed through past experiences (Helson, 1964; Sherif and Hovland, 1961). For the present study, a consumer engaged in habitual purchasing behavior is considered as having assessments regarding a familiar retailer held in a range of stable and implicit judgment scales. Stability in judgment scales is a result of stable environmental stimuli not interrupting non-
conscious assessments of the retailer and the shopping experience, respectively. Judgment scales, for example related to product price, are considered implicitly held by the consumer, as opposed explicit or exact recollections (Monroe and Lee, 1999), due to the qualitative nature of assessments elicited from long-term memory.

For example, Dickson and Sawyer (1990) observed in their seminal study of price recall, that 53% of consumers were unable to accurately recall the price of a product immediately after placing the product in their basket, whilst 21% of consumers were not able to offer an estimate. Price estimates of those who offered an estimate were on average 15% above or below the actual product price. Accordingly, other authors note (e.g. Coulter, 2002; Vanhuele and Dreze; 2002; Monroe and Lee, 1999; Estelami, 2003), the consumer has a limited capacity for storing directly accessible information in short-term memory. Estelami (2003) for example highlights that consumers are constrained in their cognitive price computational ability (e.g. ability to add and multiple costs) within a store environment and that price computation causes the consumer cognitive stress.

Monroe and Lee (1999) argue that the consumer holds a range of qualitative magnitude assessments that facilitate judgments such as “too expensive”, “a bargain” or “priced reasonably” (Monroe and Lee, 1999, pg. 220) rather than the actual cost of the product. Such magnitude assessments represent a conscious awareness triggered through mental imagery and help to relieve a consumer’s cognitive strain by providing easily accessible value judgments from memory.

All in all, these arguments indicate that the consumer generally relies on unconscious and efficient decision processes for the completion of grocery shopping. Thus, a consumer shopping within a high information environment such as a supermarket and
undertaking a large number of low-involvement purchase decisions as discussed in section 2.1 can rely on a low level of cognitive engagement in the decision making process. Instead of being fully conscious of, and cognitively considering aspects within the retail environment, the habitual consumer relies on physiological mechanisms such as pre-attentative analysis to enact appropriate judgment scales from long-term memory through mental imagery (Marks, 1999). The process of value assessments, is as such a process that results in assessment of product values based on a range of implicitly held judgment scales as explained by adaptation-level theory.

2.3.3 Variation in judgment scales influencing habitual purchasing value assessments

A consumer is theorized as amalgamating pooled perceptions of a retailer into a mentally held overall value image as discussed in section 2.3.1. The overall value image functions as an adapted standard against which the habitual consumer makes value based judgments about familiar retailers the consumer frequents often for grocery shopping (Esbjerg et al., 2012). Similar to Bitner (1992) and Fiore and Kim (2007) it is argued that value based assessments are enacted from long-term memory by factors experienced during the grocery shopping such as price cues, in-store environment, social environment and time pressures.

In applying adaptation-level, variation in shopping experience compared to previous adapted experiences is as a result of the size of the variation creating a dynamism (Helson, 1964) within a consumers working memory. The dynamism, which can fundamentally be considered as a consumers disposition (e.g. level of affective and cognitive state) can lead to a displacement of a point of equilibrium of a related judgment scale due to a conscious assessment of the salient experience. For a consumer
engaging in habitual purchasing, a perceived variation in stimuli of a familiar retailer such as a drastic change in store décor increases conscious awareness of the environment, and subsequently cognitive engagement in the purchase decision. As a result, reliance on conscious processes would be expected. The displacement of a point of equilibrium along a judgment scale due to a frequent or drastic variation in experience, leads to a modification in future value perceptions in the same fashion as observed in studies manipulating and exaggerating price cues (Urbany et al., 1988). The initial strength of perceived differences due to judgment scale displacement declines and decays overtime as the consumer adapts to and assimilates the discrepancy of the shopping experience (Bruggen et al., 2011) within long-term memory. The resulting new adapted standard of the judgment scale serves to sustain future value assessments (Oliver, 1980) made during habitual purchasing. This is as a result of psychological mechanisms such as pre-attentative analysis adapting to new standards and ‘filtering’ minor variations in consumer perceptions (Verplanken and Wood, 2006; Helson, 1964; Monroe, 2011; Esbjerg et al., 2012). However, continual variation in the purchase decision experience can alter the purchase outcome due to frustration felt by the consumer (Inman et al., 2009; Bruggen et al., 2011), and the increased conscious awareness of the purchase decision. Through variation in judgment scales new adapted standards of judgment are formed. For the retailer, the process of displacing a judgment scale (e.g. through a perceived change in product price or price setting technique) has the potential to lead to new purchasing behavior, though not necessarily positive as intended (Stiedl, 2012).
2.3.4 The role of familiarity in strengthening the value image

Judgment scales are accompanied by implicit expectations held by the consumer that serve to function as hypothesis (Esbjerg et al., 2012). These hypotheses are confirmed by experience and contribute toward future expectations (Sirgy et al., 2000). Repeated congruence between the shopping experience related to the consumers’ familiar or most frequented grocery store, and the consumers adapted judgment scales encourages habitual consumption. It is argued that this is due to familiarity of stimuli, and the similar level of arousal and pleasure experienced.

For a consumer habitually purchasing grocery products, the familiarity resulting from repeated congruence supports a low level of arousal and reduces the cognitive saliency of the information rate associated with shopping experience. The familiarity has the effect of lowering the level of consumer uncertainty associated with purchase decisions and therefore reducing associated risk with the purchase decision outcome (Mehrabian and Russell, 1974; Tversky and Khaneman, 1979; Ofir et al., 2008). Familiarity and certainty is self-reinforcing when the potential risks associated with the use of purchased products is perceived as minimal, and the consumer’s interest with the product is utilitarian in nature and part of a routine behavior (Mittal and Lee, 1989; Michaelidou and Dibb, 2008). Generally speaking, the level of risk for grocery products mostly falls below a consumer’s risk-tolerance threshold (Dholakia, 2001). This means that during the purchase situation, the consumer perceives minimal risk with the future use of the products when undertaking routine grocery shopping. Supporting the avoidance of disruption to a consumer’s sense of familiarity and certainty during
grocery shopping or to the timely completion of a routine that supports the grocery shopping can reinforce habitual purchasing.

As a result of the association of familiarity with the (stable) environment engagement in automatic routinised behavior is supported (Martin and Morich, 2011). It is therefore argued that for habitual consumers, the habit of visiting of a familiar grocery store is associated with a level of effort commensurate to the task-orientation (Wakefield and Inman, 2003) of the grocery shopping because of low situational involvement and effort. The low level of involvement generally associated with the grocery shopping leads to the consumer preferring to undertake the grocery shopping infrequently (Kalcheva and Weitz, 2006; Anckar, Walden and Jelassi, 2002).

The task of grocery shopping as such becomes habit due to similar levels of low arousal and pleasure experienced through consistency and stability in the familiar environment (Sirgy et al., 2000; Verplanken and Wood, 2006). Habits in daily activities are complemented by a matching level of effort from an individual toward the task that is a result of previous outcomes (Wood and Neal, 2009). For habitual purchasing behavior, familiarity with the task environment and task routine encourage automated behavior and similar effort (Martin and Morick, 2011) mitigating the likelihood of alternative consumption choices. As a consequence consistency in behavior corresponds with familiarity and certainty with the retailing task (Hoyer, 1984; Spanjaard et al., 2011; Iyer, 1989; Martin and Morick, 2011) encouraging inertia in product choices. When feedback from the experience is positive, consistency in behavior becomes self-reinforcing in nature and the overall value image held of a retailer by a consumer strengthened.
A consumer habitually purchasing groceries at a familiar retailer could be expected than as a result of familiarity in the experience to have a strong value image for the retailer as discussed in section 2.3.1. The strength of the value image is related to the increasing accessibility in long-term memory of judgment scales (Bettman et al., 1998; Park et al., 1994; Steidl, 2012). As a result recall techniques employing a familiar retailer as the focal object based on qualitative assessments are considered appropriate for measuring the antecedent factors of habitual purchasing behavior.

2.4. The Stimuli: Four drivers of habitual purchasing behavior

2.4.1 Value image of the retailer

In developing the model of habitual purchasing behavior in the present study the construct of value image of the retailer is conceptualised as representing an amalgamation of consumer perceptions of consistency in, and favorable value (e.g. the result of the overall assessment of give and take (Zeithaml, 1988)) attained, from a familiar and frequently visited supermarket. The conceptualisation of the value image of the retailer is comprised of two elements; perceptions of value from market positioning signals (Kirmani and Rao, 2008), and perception of value from price cues (Monroe, 2011). Combined, it is argued that these two elements have an influence on a consumers’ overall ‘mental picture’ (Zeilke, 2010) by portraying an image of value available from the retailer.

A retailers market signals (Kirmani and Rao, 2000) are amalgamated into the consumers ‘mental imagery’ (Stern et al., 2001; Zeilke, 2010) to form a perceived value image of the retailer that corresponds with customer’s expectations of product value and utility. Market positioning strategies (Lal and Rao, 1997) are designed by retailers with the
intention of positioning a store in-line with the relative needs and motivations of the retailer’s customers (Sirgy et al., 2001). Market positioning strategies involve retailers communicating with consumers via advertisements that emphasize aspects of the retailer’s desired market value position or value image.

Traditionally variations in retailer positioning are emphasised by differences in pricing and service (Bell and Lattin, 1998; Tang, Bell and Ho, 2001). Different positioning and value messages emphasize aspects such as low price, level of service and product quality (Lal and Rao, 1997; Tang, Bell and Ho, 2001; Monroe and Lee, 1999; Desai and Telukdar, 2003). Retailers adjust the mix of attributes dependent on their target audience and the heterogeneous nature of product requirements, with consideration of the position of competitors (Van Heerde, et al., 2008; Heil and Helsen, 2001). The consumer as a result holds a rationale yet implicit expectation of overall basket price and achievable utility from a retailer for a typically purchased basket. For a consumer habitually purchasing grocery products, the expectations of favorable value associated with a familiar retailer serves to function as an implicitly held hypothesis regarding the value attainable (Esbjerg et al., 2012).

In competitive markets supermarket retailers geographically close ‘cluster’ in market positioning strategy and tend toward a more hybrid blend of traditional every-day low pricing and Hi-Lo positions (Ellickson and Misra, 2007). This means that instead of favoring a high-price high-service, or low-price low-service strategy, retailers are blending service and price mix to attract customers. The clustering effect is in part due to the influence of the competitive environment on the retailers and the pervasiveness of the competitive momentum associated with price cutting tactics (Urbany and Dickson, 1991; Van Heerde et al., 2008).
Through differing forms of advertising retailers stretch the influence of market positioning across multiple levels, for example international, national, regional and local levels. In an investigation of the role that individual stores play in ‘anchoring’ perception’s of large shopping complexes, Finn and Louviere (1996) observed that a proportion of a consumer’s overall perception of quality in a shopping complex was associated with the mix of retailers. Where there was an increase in ‘discount ‘every-day low price stores’ (e.g. low cost, quality and service) (Bell and Latin, 1998) within a complex, consumer perceptions for the entire complex were significantly lower than when there were less discount stores. This finding suggests that consumer perceptions of value for a particular retailer are developed through comparison (e.g., with regard to prices and overall value offering between retailers), with the mix used by retailers transferable to the target retailer.

Retailers consistently attempt to align positioning value information with consumer needs and motivations. Retailers that have achieved a higher patronage have maximized the target consumers fixed utility through the blend of marketing positioning and price cue elements, whilst adequately satisfied enough aspects of the consumer’s variable utility (Michaelidou and Russell, 2008). Creating positive variations in the consumer’s value image through marketing efforts though can be difficult to achieve (Alba et al., 1994; Desai and Telukdar, 2003; Stern et al., 2001). It is argued that retailers generally aim to have stability in their market positioning signals that reinforce certainty of the mental value imagery required for habitual purchasing behavior. Fundamentally congruency between market positioning and price cue elements and consumer experience and expectations develops incumbent perceptions and encourages habitual consumption (see section 2.3.4). The certainty in value is matched by a perception that the regular price of products at a familiar retailer are low. This is as a consequence of
the range of experiences with the retailer (Stern et al., 2001; Finn and Louviere, 1996; Adaval and Monroe, 2002) and a subsequent perception of consistent favorable value.

The price represents the necessary sacrifice in resources required by the consumer to own a product or engage a service and thus is related to the concept of value (e.g. the perception of the overall assessment of give and take required (Zeithaml, 1988)). Retailers present signals of value to the consumer through price cues to legitimately increase the perception of value attainable from a transaction. The core of the price cue is the numerical aspect representing the monetary sacrifice required for a purchase. Fundamentally the numerical, or uni-dimensional (Estelami, 1999) aspect of the price forms a significant part of a consumer’s determination of value on offer (Reardon et al., 2010) and directly related to perceptions of risk and value associated with the purchase decision. For a habitual consumer, price cue provides a confirmatory sense of value that is aligned to perceptions of the supermarket they frequent the most for their grocery shopping.

Retailers regularly contextualize the numerical price by framing the price with additional communicative elements. Framing of the price has the effect of creating complex or ‘multi-dimensional’ prices, the intention of which is to accentuate the advertised value of the product (Estelami, 2003; Kim and Kachersky, 2006). Specifically, the communicative elements are comparative pricing (Chandrashekaran and Grewal, 2003; Lichtenstein et al., 1999; Grewal, Monroe and Krishnan, 1998), semantic cues (e.g. Lichtenstein and Bearden, 1989; Lichtenstein et al., 1991; Berkowitz and Walton, 1980) and in particular, as it is most often used, odd-ending prices (Krishan, et al., 2002; Gendall et al., 1998; Schindler and Kirby, 1997; Estelami, 2003). The consistency of odd-ending prices and semantic cues provides the consumer with a
confirmatory sense of reduced product price encouraging favorable value perceptions (Tellis, 1986).

Moreover, odd-ending prices are sometimes combined with a semantic element such as ‘Was $9.99, Now $4.99, 50% off’ to emphasize a reduction in price. Thereby, a positive perception of value by the consumer could be anticipated as the cue provides a semantic impression (‘Was ... Now’) that the price of a product has changed to a low level. The strength and direction of the price change is supported through the implied discounted value embedded within the numerical odd ending price (e.g. .99c and the magnitude discount cue of 50% off). The effects of each element on the consumers ‘image’ of the price cue therefore are not mutually exclusive (Gendall et al., 1998; Kim and Kachersky, 2006) with semantic comparisons and magnitude cues and numerical cues relatively linked mostly related to odd-end pricing cues, the most common form of pricing signals (Krishan, et al., 2002; Gendall et al., 1998; Schindler and Kirby, 1997; Estelami, 2003). Pricing signals as discussed above reinforce consumer value perception’s dependent on the setting of the elements and other experiential product experiences the consumer may recall.

When a price cue is non-consciously matched to an appropriate prior qualitative judgment such as ‘reasonable’ and ‘acceptable’, as discussed in chapter 2.3.2, the price cue has aligned with the adapted standard for the associated product and particularly if matched with a need (e.g. such is the case with fast moving grocery products), leads to consumption. Conversely, when a consumer perceives a price cue as too large compared to the functional product value, a contrast against the consumer’s judgment scale causes the consumer to engage further in the purchase decision or simply dismiss the product as too expensive. Re-evaluation of product value during shopping can lead to un-
planned purchasing and variation in the anticipated purchase outcome (Iyer, 1989; Dhar and Nowlis, 1999) and, thus, a reduction in habitual purchasing.

It is argued that the consistent use of complex price setting techniques such as odd-ending price cues, is a contributing element to the high information rate of the supermarket environment as discussed in section 2.2. Furthermore, consistent use of odd-ending price will result in the pricing technique representing confirmatory value. The price cue therefore accentuates the reliance on non-conscious value assessments for habitual purchasing. As a result, the use of odd-ending price cues by a familiar retailer is associated with good value. Combined with an overall favorable perception of value, the consumer’s value image of a familiar retailer influences consumption behavior by facilitating a reliance on implicit non-conscious magnitude judgment scales, as a consequence supporting habitual purchasing behavior. Encapsulating the presented aspect and arguments, it is hypothesized that:

**H1**: A favorable value image of the retailer will be positively associated with habitual purchasing behavior.

### 2.4.2 Value image of the in-store environment

The construct of the in-store environment value image focuses on the influence of managerially controlled store elements on habitual purchasing behavior. Stability in factors in familiar supermarkets such as products in-stock, display quality and consistency are argued to have an influence on habitual purchasing by providing familiar experiences synonymous with consistent favorable value: The in-store environment in this context refers to the arrangement of the physical area of the
supermarket. The supermarket environment contains both tangible and in-tangible elements that are either visual or atmospheric in nature (Kotler, 1973; Belk, 1975; Baker et al., 2002). The prominent tangible aspects of the in-store environment are visual design elements such as color and displays, as well as the physical aisle layouts and shelf arrangements constructed to guide and inform the consumer. These elements are complemented by in-tangible atmospherics such as music and lighting that create an implicit ambience for the consumer (Belk, 1975; Baker, Grewal and Parasuraman, 1994).

The elements of the store environment are specific to the retailer and are manipulated with the intention of influencing consumption decisions positively. The nature of the environmental influence on consumers decision-making is either explicit (Turley and Milliman, 2000) for example leading the consumer to selected promotions or product categories, or implicit e.g. through influence of perceptions of value (Grewal, et al., 1994; Bitner, 1992; Baker et al., 1994). The environment therefore contributes to an expectation within the consumer that is based on a mix between utilitarian outcomes (e.g. efficient and stable product layout) and an associated value perception.

In considering explicit design factors of a store’s interior, Baker et al., (2002) observed that an efficient and stable layout was an antecedent to store patronage and had an overall stronger effect than in-tangible elements on perceptions of merchandise quality. Similarly in their review of literature on the retail environment, Turley and Milliman, (2000) cite a number of studies where factors such as product displays significantly influenced purchase outcomes dependent on the way a product is presented. Turley and Milliman (2000) argue that these studies show evidence of the in-store environment encouraging approach (rather than avoidance) tendencies.
Ambient cues such as background music have been found to influence purchase behavior to varying degrees. For example by affecting the length of time consumers spend in-store (Dijksterhuis et al., 2005; Kim and Kachersky, 2006) and the consumer’s perception of store and product quality (Baker et al., 1994). However, these aspects are not being considered in the present investigation of habitual grocery purchasing behavior due to the subtle nature of the stimuli, and the present study’s focus on the measurement of consumer value recall through survey.

Repeated congruency between consumer expectation and experience regarding the in-store environment (Baker et al., 2002; Stern, et al., 2001) will lead to the consumer becoming accustomed to the design elements of the environment. Thus, it is argued that stability and quality in design elements maintains perceptions of favorable value and utilitarian function (e.g. availability of products) associated with the retailer. Stability facilitates a reliance on the mentally held value image of the in-store environment and associated scripted behaviors therefore maintaining a perception of value (see chapter 2.3.1). As a consequence, habitual purchasing behavior is supported as the consumer increases reliance on environmental stimuli to guide non-conscious behaviors (Ji and Wood, 2007)

Therefore it is hypothesised that:

**H2: A favorable value image of the retailer’s in-store environment will be positively associated with habitual purchasing behavior**
2.4.3 Social environment of the supermarket

The construct of the social environment regarding the purchase experience captures the potential to influence habitual purchasing behavior through factors related to the social dynamics of grocery shopping. The factors identified as influencing behavior are whether a consumer shops alone or with someone else, the level of stability in and familiarity with the accompaniment arrangement, the closeness of the relationship between the shopper and any accompaniment, and the level of frustration experienced as a result of crowds: Grocery shopping in bricks and mortar stores is an activity that involves social interaction either explicitly with fellow shoppers or accompaniment, or implicitly through perception of peer opinion. As a result of the interaction, the social environment has the potential to influence the purchase decision. For example, Hui et al., (2004) empirically showed that crowded areas attracted consumers due to a heightened sense of interest, because crowds implied a sense of quality about the products in the area. However, this often did not result in a purchase outcome. Similarly, Wakefield and Inman (2003) observed that consumers focus and purchase intentions were influenced at the point of purchase by perceptions of peer judgments. The perception was dependent on consumer price sensitivity (e.g. how they reacted to changes in product prices) and the nature of the purchase occasion. The influence of accompanying children through pestering and begging is also documented (Lee and Beatty, 2002; Shoham and Dalakas, 2005).

In opposite to the presented findings, that crowds can attract consumers, social pressure and distraction from crowding has been observed to alter consumer behavior for example by creating negative perceptions of the shopping experience (Turley and Milliman, 2000). Using Latane’s (1981) psychophysically based theory of social
impact, Argo, Dahl, and Manchanda (2005) observed that when the level of non-interactive presence went beyond a given threshold (e.g. two presence of two unfamiliar people within an aisle), this influenced consumer emotions by causing discomfort and negative feelings. It would be expected that a consumer experiencing discomfort would have heightened arousal in the social situation as a result of the change in the experience as discussed in section 2.2. Fundamentally when the consumer feels crowded, their awareness of the social environment increases, potentially resulting in turn in frustration and modified in-store behavior (Kalcheva and Weitz, 2006; Hui et al., 2004) encouraging a reliance on non-conscious purchasing. Thus, it is argued that for consumer’s habitually purchasing crowds represent an unfamiliar social interaction. The increase in unfamiliarity encourages script driven behavior by requiring the consumer to manage their movements and interactions appropriately, distracting the focus of the consumer from purchase decision.

Dijksterhuis et al., (2005, pg. 197) note that “people strongly adjust their behavior to that of the immediate social environment, without even being aware”. In considering Latane’s (1981) social impact theory, direct accompaniment by a companion during grocery shopping influences the impact of the surrounding social environment by providing an unconscious comfort. Interaction with a companion during the purchase decision can than influence the purchase outcome by providing a level of distraction away from the purchase decision dependent on the closeness of the companion (Latane, 1981), facilitating a reliance on habitual purchasing. For example, social engagement with a close companion requires less effort by a consumer due to shared familiarity and understanding and allows for greater attention to other activities such as product choice. This would have a negative effect on habitual purchasing as a result. Conversely, as the distance between relationships increases, greater effort is required to manage and
maintain communication between relationships and comply with social expectations. This encourages a greater reliance on non-conscious processes to manage the purchase decision. The social dynamics associated with accompaniment, are, thus, supposed to influence habitual purchasing depending on the closeness of the relationship and the resulting level of distraction from the purchase decision.

As a consequence for potential influence of a consumer’s accompaniment on the purchase decision and aside from the closeness of the accompanying person(s), consistency and stability in arrangements are assumed as factors that support habitual purchasing. As discussed in section 2.3.4 a stable environment encourages reliance on habits. A variation in social dynamics as described in social impact theory (Latane, 1981; Argo, Dahl and Manchanda, 2005) would create a modification to the level of distraction and focus of the consumer by contrasting previous experience with managing the environment. Therefore stability in accompaniment arrangements should positively influence habitual purchasing by not disrupting value assessments through frustration and unfamiliarity.

The social environment of the supermarket the consumer frequents regularly influences the level of engagement in the grocery shopping by providing either a distraction to the consumer or allowing the consumer to focus as discussed in chapter 2.3.3. It is argued that overall, the social environment of the grocery store has an influence on habitual purchasing. According to the definition of the social environment’s potential to influence a consumers purchase decisions, it is hypothesised that:

**H3: Social environment of the grocery store will be associated with HGPB.**
2.4.4. Time Pressure associated with grocery shopping

Time pressure represents the level of perceived time constraints that the consumer affectively associates with the task of grocery shopping. Consumers experiencing time pressures have been observed to reduce in-store search and price comparisons (Alba and Hutchinson, 1987; Chu et al., 2008), experience difficulty in assessing the value between brands (Dhar and Nowlis, 1999) and rely on alternative cues for indicators of value such as a product’s perceived quality (Suri and Monroe, 2003). These behaviors demonstrate a negative influence on consumer capabilities to make focused and cognitively engaged decisions under time pressure.

The time available to actually attend to the shopping event and make in-store choices creates a constraint on consumer activities. Constraints on time have been identified as working hours, when income is received, scheduling of leisure activities, presence of young children and distance to shopping facilities (East et al., 1994; Urbany, Dickinson and Kalapurakal, 1996; Chu et al., 2008). These constraining factors contribute to the consumer completing the task as efficiently as possible and striving for overall task efficiency, whilst relying on routine and habits that support habitual purchasing behavior.

Time pressure experienced during grocery shopping can accentuate the consumer’s perception of shopping as an un-enjoyable chore or errand for completion (Babin et al., 1994; Anckar, Walden and Jelassi, 2002). Increased stress associated with the task as a result of time pressures further encourages a reliance on habit as a driver for goal achievement (Park et al., 1994; Wood and Neal, 2009). It is argued that the conscious awareness of time constraints (e.g. continually checking the time or thinking about the
start of the next activity), distracts the consumer from focusing on the purchase decision. The distraction rather encourages automated purchasing behavior as a mechanism for coping with the limited time available by not cognitively considering every purchase decision as discussed in chapter 2.2.

In situations where the consumer’s involvement in a purchase decision is low such as in the case of grocery products, a consumer experiencing high time pressure will more readily employ heuristics to expedite and support non-conscious decision-making. Heuristics such as the reliance on the price cue as an indicator of quality (Suri and Monroe, 2003) provide the consumer with qualitative ‘rules of thumb’ (Thaler, 1985) to aid in the matching of judgment scales. The rules of thumb encourage a reliance on well-rehearsed decision options (Kahneman and Tversky, 1979) retrieved from long-term memory that are implicitly familiar and increasingly easily accessible (Pechtl, 2008; Alba and Hutchinson, 2000; Bettman et al., 1998).

Fundamentally all together pressure associated with time constraints facilitates requirement to rely on heuristic style value assessments and appropriate supportive emotional responses (Kahneman and Tversky, 1979, pg.278; Bechara and Damasio, 2005; Park et al., 1989) to manage the vast array of purchase decisions involved in grocery shopping. Encapsulating the arguments presented before, the last hypothesis is formulated:

**H4**: *Time pressure is positively associated with HGPB*
3. Empirical Analysis

3.1. Method and Sample

The sample for the empirical analysis to examine the developed model consists of two waves of random participants recruited from the general public and a cohort of second year University students. To encourage participation a lottery to win one of five $20 shopping vouchers was used as incentive.

An online standardized survey instrument was used for this study with the focus of the survey on the supermarket the respondent frequents the most for grocery shopping. As discussed in chapter 2.3.4. recall techniques based qualitative assessments around a focal object are considered appropriate. Survey based measurement procedures are suitable for assessing all aspects within the developed model. Survey based measures has been used in previous retailing related research to capture perceptions of retailer image (Reardon, Miller and Coe, 2010; Zielke, 2010) routine, (East et al., 1994) behavioral intention (Ouellette and Wood, 1998) and recall (Alba and Hutchinson, 2000; Monroe and Lee, 1999; Wood and Neal, 2009), and have been shown to identify strong habits (Wood and Neal, 2009). Participants for the first wave of the study were recruited using social media through facebook postings on sites for Australia’s two largest retailers, Woolworths and Coles, as well as a number of online blogs focused on shopping, lifestyle and cooking (for example Whirlpool, Jamie Oliver and Consumer Federation of Australia). These blogs were chosen as the topics of discussion on the blogs and forums revolved around grocery shopping behavior and purchasing opinions. In addition to online distribution, an advert was placed in a local newspaper distributed within the Newcastle, Australia region, and a number of flyers were distributed
throughout the Newcastle area through postings on public bulletin boards within shopping center complexes. The second wave of participants was recruited via postings within a second year undergraduate marketing course student site. The period between the start of collection of the first wave of data and the end of the second wave was approximately six months, five of which were focused on first wave data collection methods.

In total, 183 responses were received, with 156 (84%) completing the survey. Of the completed data sets a small number of data (11 missing values, < 1% of the total) were randomly missing. In such instances where data were missing, a mean substitution approach was used to maintain the sample size and utilize the rest of the respondents’ data (Roth, Campion and Jones, 1996; Tsikriktsis, 2005). To ensure the suitability of our respondents, a control question was included in the survey that required respondent’s to rate the level of frequency (from 1 ‘never’ to 7 ‘always’) with which they were involved in undertaking the grocery shopping for their household. Respondents that indicated ‘1’ on this question were removed as the respondent would have no or very limited possibility to develop a perception of the shopping experience. Considering the potential influence on recall of shopping experience, another control question was included to assess the suitability of respondent assessments (Ofir et al., 08). Respondents observed a picture of a grocery basket (see Appendix B) filled with ten low value items commonly found in a grocery store. This was followed by the respondent supplying an estimate for the overall price of the basket. The average price provided was $37, with 5 respondents offering no estimation. Mean substitution was again used to maintain the approach for managing randomly missing data. The actual cost of the basket was AUD$34.92. The variation between the average price estimated
by respondents and the actual price was 5.9% ($2.08). This falls below the average error range observed in price recall studies (Lee and Monroe, 1999) confirming the adequacy of the visual cue used in the control question in stimulating value assessments from memory. Furthermore the result demonstrates that the participants have had sufficient experience with supermarket retailers to form implicit judgment scales. Monroe and Lee (1999) note that an individual’s implicit memory is based on ‘knowing’ judgments developed through familiarity. The approach of eliciting implicit memory and ‘familiarity’ of past events is congruent the role of experience and familiarity in developing the strength of a consumer’s value image discussed in chapter 2.3.4.

In total one response was removed from the completed survey data as the respondent indicated no involvement with grocery shopping (e.g. by indicating a ‘1’ never undertake the grocery shopping for the question). This left a final sample of 155 respondents, of which, 130 (84%) were from the first wave. Overall the sample size used in the study meets the requirements of the 10 times rule of thumb with the sample size more than 10 times larger than the number of paths aiming at any construct in the outer and inner model (Hair et al., 2012). Comparison of responses from wave one and wave two showed that there were no significant variances in responses between the cohorts.

The average age and household income of respondents in the sample was 42.5 years and AUD$100,428 respectively. This income is approximately 14% higher than the national Australian household income of AU$87,776 (ABS, 2011). Approximately 69% of respondents were female, indicating that like observed in previous studies (Inman et al., 2009; Block and Morowitz, 1999; Wakefield and Inman, 2009) females predominately
undertake the grocery shopping for a household. The average household in the sample consists of 4.2 people (2.6 adults and 1.6 children (<18 years of age)), which is larger than the Australian national average of 2.6 people (ABS, 2011a). Respondents were also asked to provide the name of the retailer that they frequented the most to complete their grocery shopping. 78% (121) of respondents provided an answer for this question, with 40% indicating Woolworths, 36% Coles, 13% Aldi and the remaining 11% providing a unique response. Combined, 76% of the respondents who provided an answer to this question frequented either Woolworths or Coles which is similar with the retailers combined market share of 70% in Australia (Business Monitor, 2013). This indicates that the sample included in the study is representative of the market in terms of the supermarket patronage. Whilst there were differences between the national average and the demographic composition of respondents, the general make-up of the respondent cohort was considered suitable as the differences were not seen as compelling enough to lead to a potential variation in behavior.

3.2. Measurement of constructs

The empirical examination of the determinants of habitual purchasing behavior requires the development of an appropriate measurement model that captures both the influencing dimensions and observable measurement items of habitual purchasing. In order to reliably and validly measure the theoretical constructs and relationships that determine habitual purchasing behavior, multiple-item measurement models were employed. Where applicable, measurement items were drawn, or adapted directly from the literature (see Appendix B). However, due to sparse scientific literature on habitual purchasing behavior as discussed in chapter 1, a number of measurement items were
developed based on the measurement construct definitions under investigation and the conceptual model of habitual grocery purchasing behavior developed in chapter 2.

As outlined in chapter 2, the present study modeled habitual purchasing behavior as a four-dimensional construct. The retailer value image construct was measured as a 3-item construct, intended to measure respondents overall retailer value image associated with the supermarket they frequented the most. The first item, consistency in pricing levels, was drawn from Zielke’s (2010) price image construct.

The second and third items were developed based on the construct definition of consumer perceptions of favorable value. The second item sort to measure certainty regarding value on offer, whilst the third item measured respondents perceptions of confirmative value associated with odd-ending pricing as discussed in chapter 2.4.1.

The in-store value image construct was developed based on a 3-item scale, with two items (display quality and products in-stock) adapted from Reardon et al., (2009) construct of store image. A third item was developed to measure the perceived consistency of the in-store environment as discussed 2.4.2.

The construct of social environment however is entirely new. A 4-item scale was developed based the role of social influences and interactions within a retail environment as discussed in chapter 2.4.3 The measures covered the aspects of the relationship of accompaniment, accompaniment stability and the influence of crowds on feeling of frustration.
The construct of Time Pressure developed in chapter 2.4.4 has only one indicator (limited time available for grocery shopping) that is adapted from Beatty and Ferrell, (1998) construct of time available.

For the measurement of the four dimensions of habitual behavior (retailer value image, in-store value image, social environment and time pressure) formative modes were considered appropriate based on the content specification of the constructs. This approach is consistent with modeling the habitual purchasing behavior within the S-O-R framework as discussed in chapter 2.1. The use of formative measurement presumes that the four factors and the associated formative indicators, respectively, are identified to act as stimuli to cause habitual purchasing behavior. The usefulness of formative measurement in assisting managers in understanding subtler factors of consumer perception (such as trust) has been well demonstrated (Ahrholdt, 2011).

The construct of habitual grocery purchasing behavior (HGPB) is entirely new construct. The behavior of habitual grocery purchasing as discussed in chapter 1 and chapter 2 whilst non-conscious is considered measurable through routine and perceptions of favorable value (see chapter 2.4.1.). As such a unique five-item construct was developed based on relevant literature around habit development and the consumer’s value image as discussed in chapter 2.3.4. Item one presented respondents with a definition of habitual purchasing behavior (see Appendix B) prior to respondents indicating to what extent they had previously engaged in such a behavior. The intention of presenting the definition of habitual purchasing in the present study was to elicit the respondent’s implicit memory (Monroe and Lee, 1999). Items two and three measured respondent’s likelihood of undertaking the grocery shopping at the same time of the week, and on the same day of the week, as an indication to the role of habit and stability
in routine engagement discussed in chapter 1. In a meta-analysis of habit behavior studies, Ouellette and Wood (1998) observed that studies focusing on behavior prediction operationalised definitions using adjective ratings of passed behaviors as indicators of strength of future behavior. Similarly, Wood and Neal (2009) note that subjective scales are appropriate for measuring habit strength. As such, the standardized subjective assessments for items one, two and three should provide an adequate representation of habit strength. Item four captured the awareness of reliance on routine to achieve grocery shopping. The fifth item measured adapted awareness of consistency in basket costs attained at the supermarket frequented the most as an additional symptom of habitual grocery purchasing.

Discussion with an expert and content specification of indictors led to the operationalization of the construct of habitual purchasing behavior as a reflective measurement, an approach regularly used in marketing literature (Hair et al., 2012) to measure aspects such as intended behavior (Hair et al., 2012; Ahrholdt, 2011; Carlson et al., 2013; Venkatesh and Agarwal, 2006).

The response format concerning the measurement items of all study’s constructs was a pre-defined Likert-type scale ranging from 1 (either completely disagree or almost never) to 7 (either completely agree or almost always). A complete list of items is provided in Appendix B.

### 3.3. Estimation Procedure and Results

Structural equation modeling (SEM) represents a suitable multivariate data analysis method to investigate the hypotheses proposed in chapter 2.4 in the context of the
theoretical model and the available empirical data. Two SEM methods – the covariance-based (e.g., Rigdon, 1998) and the variance-based PLS-SEM approach – can be used to estimate cause-effect models with latent variables. Both are suitable methods for testing the proposed hypotheses (Hair et al., 2012; Henseler et al., 2009). The present study uses the variance-based PLS-SEM approach as PLS-SEM supports the study’s prediction-oriented goal (i.e., the prediction of HGPB) and enables unrestricted implementation of the four formative measurement models associated with the exogenous latent variable (Hair et al., 2012). For the study empirical data and the statistical software SmartPLS 2.0 (Ringle et al., 2005) were used to estimate the PLS-SEM. The results are displayed in Figure 3.3.1.

**Figure 3.3.1. - Estimation results for model of habitual grocery purchasing behavior**

![Diagram of Habitual Grocery Purchasing Behavior](image-url)
3.4 Assessment of reflective measurement model.

Several evaluation criteria (e.g., indicator reliability, average variance extracted (AVE), and internal consistency) are relevant when assessing the reliability of reflective measurement models (Hair et al., 2012). The AVE captures the portion of the reflective indicator block’s variance that the associated construct can explain. All but one indicator in the reflective measurement model (engage in HGPB) show very high loadings above the critical value of .70 (see Table 3.4.1.). To maintain theoretical consistency, all indicators were left in the model (Hair et al., 2012). Smaller loadings are commonly accepted within the literature (not only with regard to newly developed constructs (cf. Bagozzi and Baumgartner 1994; Chin 1998; Hulland 1999)) and the analysis of further evaluation criteria yielded good results supporting the retention of all indicators in the model.

Table 3.4.1. - Reflective indicator loadings of HGPB and cross-loadings.

<table>
<thead>
<tr>
<th></th>
<th>HGPB</th>
<th>Significance t-values</th>
<th>Market Positioning</th>
<th>Social Environment</th>
<th>Store Environment</th>
<th>Time Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost is always similar</td>
<td><strong>0.7072</strong></td>
<td>5.327***</td>
<td>0.3446</td>
<td>0.3216</td>
<td>0.2169</td>
<td>0.0351</td>
</tr>
<tr>
<td>Shop on the Same day</td>
<td><strong>0.7575</strong></td>
<td>17.928***</td>
<td>0.2526</td>
<td>0.2593</td>
<td>0.1477</td>
<td>-0.0722</td>
</tr>
<tr>
<td>Shop at the same time</td>
<td><strong>0.7469</strong></td>
<td>9.988***</td>
<td>0.1527</td>
<td>0.2993</td>
<td>0.1217</td>
<td>-0.0115</td>
</tr>
<tr>
<td>Engage in HGPB</td>
<td><strong>0.5737</strong></td>
<td>11.918***</td>
<td>0.1738</td>
<td>0.3666</td>
<td>0.0390</td>
<td>0.0906</td>
</tr>
<tr>
<td>Rely on routine</td>
<td><strong>0.8099</strong></td>
<td>11.977***</td>
<td>0.2433</td>
<td>0.3250</td>
<td>0.1151</td>
<td>-0.0168</td>
</tr>
</tbody>
</table>

* Significant at the p < .10 level ** Significant at the p < .05 level. *** Significant at the p < .01 level. ns: not significant

The measurement models’ internal consistency (i.e., composite reliability) is satisfactory, with a value exceeding .84, above the commonly accepted 0.7, likewise, the AVE is .52 which is above the critical .50 level (Henseler et al., 2009; Becker, Klein and Wetzels, 2012) (see Table 3.4.2.).
Table 3.4.2. - AVE and Composite Reliability for HGPB

<table>
<thead>
<tr>
<th>Latent Variable</th>
<th>AVE</th>
<th>Composite Reliability</th>
<th>R Square</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGPB</td>
<td>0.5234</td>
<td>0.8443</td>
<td>0.2696</td>
<td>0.7682</td>
</tr>
</tbody>
</table>

Finally, we establish discriminant validity on the basis of the cross loadings’ analysis and the Fornell-Larcker criterion (Fornell & Larcker, 1981) (see Table 3.4.3.). With fulfillment of the Fornell-Larcker criterion, shared variance for each latent variable and their associated indicators is confirmed as higher than the shared variance with other latent variables.

Table 3.4.3. - Proof of Fornell-Larcker criterion on the basis of latent variables’ correlations

<table>
<thead>
<tr>
<th>Latent Variable</th>
<th>HGPB</th>
<th>Retailer Value Image</th>
<th>In-store Value Image</th>
<th>Social Environment</th>
<th>Time Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGPB (AVE&lt;sup&gt;1/2&lt;/sup&gt;)</td>
<td>≤ .7230</td>
<td>0.3350</td>
<td>0.1841</td>
<td>0.4398</td>
<td>0.0106</td>
</tr>
</tbody>
</table>

3.5 Assessment of formative measurement models.

The formative measurement model evaluation offers only very few criteria (Hair et al., 2012). There is little supplementary statistical support for conceptually-specified indicators. The formative indicators’ weights, however, demonstrate their relative contribution within the measurement model and are a useful criterion. Accordingly, the present study analyzed the size, the algebraic sign, and the significance of the weights. For the latter, we used the bootstrapping procedure on 1000 subsamples, and selected the no sign change option (Hair et al., 2012; Henseler et al., 2009).

All but five indicators’ weights of the formative items are significant (α level <.10); the exceptions are: in-store environment display consistency, display quality; social
environment accompaniment and closeness; and market positioning low price perception (see Table 3.5.1. and Figure 3.6.1.). Although these items do not contribute significantly to forming the construct, we kept them so as not to exclude conceptual, and potentially managerially relevant, content from this study (Hair et al., 2012).

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-Values</th>
<th>VIF</th>
<th>Path coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular price low</td>
<td>3.35</td>
<td>1.462</td>
<td>0.951\text{ns}</td>
<td>1.089</td>
<td>-0.302</td>
</tr>
<tr>
<td>Certain about value</td>
<td>3.79</td>
<td>1.528</td>
<td>3.130***</td>
<td>1.117</td>
<td>0.842</td>
</tr>
<tr>
<td>Odd price value</td>
<td>3</td>
<td>1.499</td>
<td>1.655*</td>
<td>1.045</td>
<td>0.436</td>
</tr>
<tr>
<td>Display consistency</td>
<td>5.06</td>
<td>1.404</td>
<td>0.627\text{ns}</td>
<td>1.534</td>
<td>0.321</td>
</tr>
<tr>
<td>Display quality</td>
<td>4.72</td>
<td>1.407</td>
<td>0.239\text{ns}</td>
<td>1.473</td>
<td>0.134</td>
</tr>
<tr>
<td>Products in-stock</td>
<td>4.38</td>
<td>1.605</td>
<td>1.693*</td>
<td>1.199</td>
<td>0.760</td>
</tr>
<tr>
<td>Shopping accompanied</td>
<td>3.56</td>
<td>2.163</td>
<td>0.714\text{ns}</td>
<td>1.695</td>
<td>0.202</td>
</tr>
<tr>
<td>Closeness of accompa.</td>
<td>4.98</td>
<td>2.32</td>
<td>1.126\text{ns}</td>
<td>1.783</td>
<td>-0.331</td>
</tr>
<tr>
<td>Stability in accompa.</td>
<td>5.2</td>
<td>2.021</td>
<td>5.070***</td>
<td>1.13</td>
<td>0.866</td>
</tr>
<tr>
<td>Crowds frustrate</td>
<td>5.5</td>
<td>1.601</td>
<td>1.966**</td>
<td>1.030</td>
<td>0.442</td>
</tr>
<tr>
<td>Availability of time</td>
<td>4.55</td>
<td>1.863</td>
<td>-</td>
<td>-</td>
<td>1.000</td>
</tr>
</tbody>
</table>

* Significant at the p < .10 level **Significant at the p < .05 level.
***Significant at the p < .01 level. ns: not significant

Finally, we used the variance inflation factor (VIF) to assess whether critical collinearity levels of items affect the results. The variance inflation factor value for each formative item is well below 5 (see Table 3.5.1) and, thus, collinearity of items is not an area of concern (Henseler et al., 2009).

### 3.6 Assessment of structural model.

The variance explained by the model ($R^2$) is a key criterion for evaluating the structural model’s quality in PLS-SEM, because a valid goodness of fit index is not available (Hair et al., 2012). The $R^2$ for the target construct of habitual purchasing
behavior is 27% and, according to Chin’s (1998) classification nearly good. Moreover, the Stone-Geisser’s $Q^2$ criterion is above zero for the construct (Hair et al., 2012; Henseler et al., 2009). Figure 3.6.1 shows the significance of the path coefficients. The Retailer Value Image $\rightarrow$ HGPB path coefficient (size: 0.242) is significant at the .05 $\alpha$-level, whilst the social environment $\rightarrow$ HGPB relationship (size: 0.373) is significant at the .01 $\alpha$-level. The in-store value image $\rightarrow$ HGPB relationship (size: 0.131) and Time Pressure $\rightarrow$ HGPB (size: 0.028) relationship however were not significant regarding a conventional threshold of $\alpha < .10$.

Figure 3.6.1. - Structural model path-coefficient bootstrapping results
4. Discussion and implications

The results of the reflective measurement model of habitual grocery purchasing behavior confirm that a reliance on routine, engagement in habits (such as day and time for task completion), certainty in basket cost and an awareness of in-store decision-making (e.g. product decisions will minimal consideration), are consumer traits symptomatic of habitual grocery purchasing. The adequacy of the theoretically (and statistically) inter-related indicators in measuring the outcomes of habitual purchasing is supported by the quality of the data and the specification of the underlying construct. Hence the model for reflectively measuring habitual purchasing behavior is supported.

From a theoretical perspective, consumers implicitly seem to associate the grocery shopping as a low arousal task discussed in chapter 2.2. The subsequent low level of involvement represents an optimization of factors related to the purchase situation observed through reliance on routine and habit engagement, that directly contribute to the completion of the task in the supermarket environment. As discussed in section 2.2, involvement associated with the shopping task plays a crucial role in the purchase decision by determining the balance between cognitive engagement and reliance on adapted judgement scales: confidence in the repetitive favourable value of basket costs is associated with a reliance on routine and habit engagement. Though not part of the PLS-SEM implicit confidence in value was observed in the basket estimate control question. The data from the basket estimate control question provides support to the notion that the consumer holds a range of adapted judgement scales within long-term memory (Monroe and Lee, 1999). On the basis of the basket estimate control question
and the quality of the reflective model, the judgement scales are product and retailer specific and are associated with a desired utility (Park and Moon, 2003; Babin et al., 1994) as observed in the reflective model. It is concluded than on the basis of the control question and quality of the reflective model that an overall positive value image of the retailer frequented the most for grocery shopping implicitly supports confidence. This results from the familiarity and certainty in favourable value and utility achieved by a consumer regarding the retailer they frequent the most for grocery shopping.

Of the four constructs conceptualised as antecedents of habitual grocery purchasing, two are supported by the data (see figure 3.3.1. together with 3.6.1.); the retailer value image (path co-efficient 0.242) and social environment (path co-efficient 0.373). Both constructs are significantly positively associated with habitual purchasing behavior. Thus \( H1 \) (retailer value image positively influences habitual purchasing behavior) as well as \( H3 \) (social environment influences habitual purchasing behavior) are confirmed.

Taking the measurement indicators of those two constructs into account, the retailer value image is influenced by certainty in attainable value and the use odd-ending pricing. To encourage and maintain habitual purchasing retailers should emphasise stability in marketing signals (such as price promotions, product range and in-store design elements). For example retailers should seek to present price cues with odd-endings, whilst promoting an overall impression of attainable value which should enhance the certainty of customers. The potential of the actual cost of a retailer’s products to impact a consumer’s life provides explanation to the saliency of retailer value image on habitual purchasing behavior. Fundamentally, if a consumer cannot afford to purchase groceries within a budget, increased search behaviors would be expected until equilibrium between utility and value judgments is established. Certainty about value achievable encourages habitual purchasing by supporting confidence
associated with a retailer. Similarly, consistency in confirmatory value of odd-ending pricing as discussed in chapter 2.4.1 supports consumer familiarity with the retailers value offer (through an association with the overall value image held of the retailer) and encourages habitual purchasing. Combined, certainty about value and odd-ending pricing influence a consumer’s overall retailer value image. Focusing on low price rather does not influence habitual purchasing behaviour according to the empirical results.

The potential of the social environment (cf. confirmation of H3) to influence habitual purchasing is determined by factors unique to the consumer as observed through the significant influence of perceptions of crowding and stability in accompaniment arrangements. The influence of the social environment on habitual behavior as hypothesized in section 2.4.3 is substantiated by the data to be important because of the influence of consumer frustration toward crowding and the influence of stability in accompaniment arrangements. From a theoretical perspective, the dynamics of the social environment elicit a level of arousal in the consumer that is familiar and appropriate for dealing with the social interactions required for completing the task as discussed in chapter 2.2. By understanding the in-store social dynamics of a consumer purchasing habitually, retailers can focus on store arrangements such as to manage the strength of effects associated with crowding. Thus, to influence habitual grocery purchasing behavior positively via the social environment, a retailer can seek to actively manage crowding effects at target in-store locations. This is a result of an increase in frustration with crowds increasing engagement with habitual grocery purchasing behavior. Crowding has the benefit than of distracting the consumer from the multitude of purchase decisions, encouraging a reliance on an overall value image of the retailer. Similarly, retailers should develop strategies to encourage consistency in
accompaniment. Those strategies could be focused on directly engaging accompaniment for example by extending loyalty schemes to using interactive tasks to encourage and reward on-going participation. Coupons that are valid dependent on continuous and frequent presence of a favoured person for example, could than create a conscious commitment by the consumer and the accompaniment to undertake the grocery shopping together. Interactive tasks and coupons as part of the grocery shopping experience potentially have the benefit of encouraging stability in accompaniment through positive experience and favourable value. Stability in accompaniment arrangements provides consistency in the environment that develops a reliance on routine and habit as discussed in chapter 2.2. The influences than of crowding and stability in accompaniment contribute to a social environment that is part of the grocery shopping experience and is positively associated with habitual purchasing.

The constructs of time pressure (path co-efficient 0.028) and in-store value image (path co-efficient 0.131) were positively associated with habitual purchasing according to the size of the path-coefficients, though both constructs could not be confirmed at the α 10% level. \( H_2 \) (in-store value image positively influences habitual purchasing) and \( H_4 \) (time pressure positively influences habitual purchasing) are not supported by the empirical data. A contributing factor to these non-significant results could be the relatively small sample (n=155), with the mean sample size of reviewed PLS-SEM studies by Hair et al., (2012) well above (n=211.29) the present study.

Time pressure has been observed to influence decision-making (Suri and Monroe, 2003; Park and Iyer, 1999), and be affectively associated with utilitarian experiences (Babin et al., 1999). According to the empirical results, time pressure however does not appear to play a central role in influencing habitual decision-making as hypothesised in \( H_4 \) in the
current work. It is postulated that this is a result of time pressures being the result of routine constraints or life style preferences (e.g. time of day, same day etc) as observed in the reflective measurement model. The awareness of time pressure is associated with the constraints or life style preferences. This would suggest that time pressure may be implicitly reflectively associated with habitual purchasing, rather than a antecedent facilitator or barrier. Further, the non-significant result may also be attributed to the situational nature of time pressure (e.g. experienced during grocery shopping and product selection) and as such not salient for respondents.

Similarly, consumer perception of tangible aspects of the in-store environment that are attributed to the in-store value image have previously been found to influence in-store behavior (Baker et al., 2002; Turley and Milliman, 2000). However, on the basis of the empirical results these attributes of the in-store environment do not appear to significantly contribute toward habitual purchasing as theorised in H2. As demonstrated by the reflective measurement model developed to measure habitual grocery purchasing behavior, routine and habit engagement are outcomes of habitual purchasing. The present work focused on aesthetic attributes associated with perceptions of quality and consistency in product display. Utilitarian aspects of the in-store environment that focus on enhancing task completion in a functional sense (e.g. quality of trolleys or ease of checkout and payment) might than be associated with habitual purchasing as driver factors.

To obtain greater insight into the relative strength of the significant formative indicators, the total effect of each indicator is presented in figure 4.1.
Figure 4.1. Total effects of formative indicators on habitual purchasing behavior.

Four indicators, (crowds frustrate, stability in accompaniment, odd price value and certainty about value) as identified in 3.6.1 are observed in figure 4.1. as antecedent indicators of habitual grocery purchasing. The significance of the indicator products in-stock however should be consider should be considering the strong influence of the indicator. The effects of the remaining indicators do not contribute significantly toward influencing habitual purchasing. A number of reasons might lead to this result. Firstly and possibly most important the small sample size (n=155). Secondly, perception of limited time does not influence decision-making in habitual purchasing behavior but rather influences the constraints that develop habits associated with grocery shopping.
Thirdly, closeness of accompaniment, nor shopping accompanied or alone influence habitual grocery purchasing behavior because of the strength of other social factors within the store such as consistency of arrangements and level of crowding. Fourthly, the display quality and display consistency of in-store product displays does not add to the utilitarian value of the in-store environment associated with habitual purchasing. Finally, regular low pricing does not positively influence habitual purchasing behavior due to an implicit inverse relationship with pricing and perceptions of product quality and the relative unimportance of particular product prices compared to overall value.

The five antecedent indicators (crowds frustrate, stability in accompaniment, products in-stock, odd price value and certainty about value) are representative of stimuli controlled by the retailer and stimuli unique to the consumer’s social environment. From the perspective of the S-O-R framework established in the present work, if the level of these five stimuli increases, positive effects such as low levels of arousal, pleasure and cognitive engagement can be expected and thus a positive effect on habitual grocery purchasing behaviour (as discussed in chapter 2.1). For example, stability in accompaniment arrangements influences engagement in habitual purchasing by supporting familiarity in the social environment. The familiarity of either consistently shopping with a companion(s), or alone, contributes to maintaining a low level of arousal within the consumer (organism). Extended periods of stability in accompaniment arrangements will further encourage habitual purchasing behaviors. Similarly, the more crowds frustrate the consumer, the greater the consumer engages in habitual purchasing according to the empirical results. Thus, the more crowded the supermarket environment, the more engaged a consumer becomes in habitual grocery purchasing behavior. The ‘feeling’ of frustration experienced by the consumer is a result of high arousal in the non-immediate social environment being spiked such that the
consumer is focused on managing their behavior detracting from the task and encouraging a reliance on non-conscious scripts behaviors. Hence, habitual purchasing behavior is influenced by two social stimuli; one unique to the consumer (stability in accompaniment), the other to the situation (crowding). A functional aspect of the in-store environment, the availability of products, rather than aesthetic aspects (e.g. display quality and display consistency, (Baker et al., 2002)) has a moderately significant effect on habitual purchasing behavior. Fundamentally, to encourage habitual purchasing it may be beneficial for retailers to ensure consumers can complete the grocery shopping adequately. This result is consistent with the notion of a consumer seeking to optimize their utility by matching expected basket outcomes with a commensurate level of effort (e.g. to visit a small store of stores) (Babin et al., 1994; Lal and Rao, 1998). The influence of certainty about value and odd-ending price value in encouraging habitual purchasing is confirmed as hypothesised in H1 in section 2.4.1. The strength of certainty about value demonstrates the influence of the underlying perception of favorable value in supporting habitual purchasing. Similarly, consistent use of odd-ending prices maintains stability in retailer price signals, presents an impression of reduced (but not necessarily low) cost, and as such encourages a reliance on adapted judgment scales for decision-making.

To facilitate an interpretation of the performance of retailers frequented the most by the respondents, an importance-performance analysis was conducted (Martilla and James, 1977). An importance-performance analysis assists in the prioritization of indicators beyond the total scope of the total effects for development of managerial implications. Following Ahrholdt (2011), a performance index was constructed from respondents mean response values providing a scale of 0 to 100. Each performance index is juxtaposed against the formative indicators relative importance to the habitual grocery
purchasing behaviour construct (i.e. the total effect). The mean of the performance indices and total effects provides two lines that are used to divide the matrix into four quadrants (see figure 4.2.).

**Figure 4.2. Priority matrix for formative indicators of habitual grocery purchasing behavior**

![Priority Matrix Diagram]

According to Martilla and James (1977) typography, the grocery stores frequented the most by respondents (Woolworths and Coles) are, for example, effectively providing an environment that enables stability in accompaniment. The two factors in the bottom right quadrant, certainty about value and odd price value, are above the mean of importance however low on the performance index. This indicates a deficiency in the performance of Woolworths and Coles marketing signals (such as price promotions, product range and in-store design elements) and subsequent ability to influence a
consumer’s retailer value image. As suggested by Martilla and James’ (1977) typology, managers should concentrate here on increasing performance. As the strength of both indicators is controllable by the retailer this finding presents an opportunity for Woolworths and Coles. Developing strategies that support consumers overall retailer value image that can influence the consumer when not undertaking the grocery shopping would be advantageous to develop. Strategies focused on enhancing certainty about value and odd price value would strength the role of the overall value image influencing habitual consumption.

Given the borderline performance result of products in-stock, managers should keep an eye on this aspect as it could potentially improved to influence habitual grocery purchasing behavior more effective. For example, by adequately stocking products, retailers are allowing for the successful completion of a consumers task, in-turn potentially contributing to creating a popular and subsequently busy crowded environment. It is concluded then that retailers should maintain, and emphasize through market positioning, consistency in product availability to maintain favourable value in the task environment and subsequently enable stimuli in the environment to engage adapted judgement scales.
5. Conclusions

Understanding the behavior of a consumer habitually purchasing grocery products has real implications for supermarket retailers, particularly in terms of focusing and maximizing marketing expenditure. With approximately AUD$35 billion revenue potentially generated in the Australian, and a combined USD$890 billion in revenue from the US and European markets as a result of the non-conscious behavior, the financial impact and competitive advantage potential for retailers is significant.

Although many aspects of consumer decision-making have been empirically investigated, identification of factors influencing habitual purchasing in the scientific literature is lacking. The intention of this study was to construct a measurement model for habitual purchasing behavior that identified the origin of antecedent factors of the purchasing behavior in grocery shopping. By integrating literature from marketing, psychology, consumer behavior and neuro-marketing, a holistic model was developed that resulted in the identification of four constructs likely to influence habitual behavior.
Those four factors are the retailer value image, in-store value image, social environment and time pressure.

Using a formative measurement approach for each factor enabled the narrowing of the influences on the non-conscious behavior and the development of managerially relevant insights. This study presents for the first time, statistical evidence that habitual purchasing behavior is influenced by factors unique to the retailer and the consumer. The present study develops a model of habitual grocery purchasing behaviour within the S-O-R framework to allow for conceptual analysis of the factors. The use of the framework and a performance-importance analysis facilitates the development of appropriate managerial insights relevant for habitual grocery purchasing behavior. The ability of the measurement model to isolate the strength of constructs provides a basis for understanding value perceptions and social environments from a new perspective.

The conceptual synthesis of the measurement model with the stimulus-organism-response framework further provides insight. The stimulus-organism-response framework provides a clear structure to the process of stimuli eliciting from a consumer a sequence of non-conscious processes that lead to habitual purchasing behavior. Considering the estimation results for social environment and retailer value image, attention in the management of perceptions associated with these constructs is stressed. However, the potential influence of factors associated with time pressure and store environment constructs could not be confirmed though provides avenues for further investigation.

The formative indicators of the retailer value image and social environment constructs function as stimuli for encouraging habitual purchasing. The five indicators (that relate to effects of crowding, the role of stability in accompaniment, the consistency of
products in-stock, the confirmatory role of odd-price value and familiarity of certainty in value) demonstrate a positive and significant relationship with habitual grocery purchasing behavior such that a positive change in an indicator would result in stronger engagement in habitual grocery purchasing behavior. The finding that regular low pricing has no influence on habitual purchasing, though an implicit certainty about value does, provides an avenue for further research focusing on the role that positive or negative variation in implicit certainty plays in terms of habitual decision making. Similarly, that the source of accompaniment does not influence habitual purchasing behavior, but rather stability in accompaniment arrangement and crowding do presents an opportunity to reconsider the role of social environment dynamics and the implication of these dynamics in terms of differing social situations within supermarkets.

An importance-performance analysis reveals that odd price value and certainty about value provide an effective opportunity for supermarket retailers as the performance of the indicators offers a comparatively large potential for improvement. Managers should concentrate on increasing a positive perception around these factors to effectively creating a positive association with consumer’s overall retailer value image. Considering that regular low pricing does not significantly influence habitual purchasing behavior, it is concluded that aggressive price discounting will not alter consumer perceptions of value and, thus habitual purchasing. Engaging in pricing wars and reducing margins to stimulate volume increase (Van Heerde, Gisjbrecths and Pauwels, 2008) is not therefore the most appropriate strategy to routinise patronisation on the basis of habitual purchasing (Stiedl, 2012). Marketing campaigns rather focused on creating confidence on the certainty of basket value attainable using confirmatory odd-ending price cues would be more appropriate. For retailers such as Woolworths and
Coles engaged in a duopoly market, points of differentiate based on these aspects of value may positively separate out a competitor's offering such as to enhance the overall value image of the retailer held by a consumer.

The present work however has limitations that require further investigation through future research.

Further validation of the proposed model of habitual grocery purchasing behavior through the collection of a greater sample size and the refinement of measurement scales as well as the inclusion of further constructs could strengthen the explanatory power of the model. For example, the influence of factors related to time pressure need consideration, in particular the role of time in constricting routine, rather than perceptions of limited time associated with grocery shopping. Similarly, development of the construct beyond a single item would likely be beneficial to understanding the relationship between routine, habit and decision-making. The development of adequate scales for the measurement of household composition may contribute for understanding pressures associated with the performance outcome of the task. Previous research (Block and Morwitz, 1999; Inman et al., 2009; Lee and Beatty, 2002) has shown that consumers can associate pressure with grocery shopping as a result of family dynamics (e.g. the role children can play in decision-making and the pressure of ensuring correct product purchases). Considering the influence of the social environment observed in the present work, a measure of pressure experienced as a result of family and household composition appears appropriate. Similarly, reliable measures of personality could also be incorporated. A dimension of personality would provide depth to in-store consumer social dynamics and incorporate a consideration of underlying conditions that may
influence a consumer’s optimal threshold for information processing (Fitzsimons et al., 2002).

The role of branding as visual stimuli for habitual purchasing and the matching of consumer needs in-store is an aspect that might be considered. Implications for retailers in respect to the potential of implementing a brand extension to achieve a price premium (e.g. in-conjunction with either a logo or product design change) (Sattler et al., 2010), and the role of the change to either disrupt or maintain habitual purchasing are compelling.

The S-O-R framework developed to conceptualise habitual behavior acknowledges the role of physical factors in influencing decision-making. As a consequence, validation of measures using objective approaches is considered appropriate and necessary. Designing experiments using techniques such as galvanic skin responsiveness (Walla et al., 2012) and motion tracking technology (Nesbitt, Snodgrass and Tilbrook, 2013) provide opportunities to build a measurement model that includes measurements of arousal and decision-making (such as time spent visually considering a product, or responsiveness to other consumers) that can be manipulated through experimental settings. Such approaches might also present interesting opportunities in-terms of integrating qualitative techniques (such as the videographic and in-depth interviews used by Spaanjard et al., 2011) with quantitative research approaches (e.g. PLS-SEM). Integration of methods, and appropriate data presents some interesting PLS-SEM possibilities, particularly in terms of simulation development (Reinartz, Haenlein and Henseler, 2009) focused on the quantification of variance in factors as a result of a change in physical state. For example, understanding how the strength of antecedent factors vary dependent on arousal has potential to provide interesting insight into the
drivers of habitual purchasing behavior and the role of the consumer in decision-making versus influence of the retailer. All in all, the present work provides a variety of new insights into the relationship between the consumer and supermarket retailers. The partly exploratory nature of the work has opened avenues for further research that potentially may lead to further refinement of the measurement of habitual grocery purchasing behavior.
References


Argyriou, E., (2011), Consumer intentions to revisit online retailers: A mental imagery account, Psychology and marketing, 29, 1, pp.25-35.

Australian Bureau of Statistics (ABS)., (2012), 6532.0 Household income and income distribution, www.ABS.gov.au


Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, pp.382-388.


Spanjaard, D., Freeman, L., and Young, L., (2011), The conscious decision versus the unconscious choice: Observed grocery shopping, *proceedings from The 3rd annual symposium on current developments in ethnographic research in the social and management sciences*, United Kingdom.


Urbany, J. E., Kalapurakal, R, Dickson, P. R., (1996), Price search in the retail grocery market, *Journal of Marketing*, 60, 2, pp.91-104.


APPENDIX A

Approval from Human Ethics Committee 2012-0371
### Notification of Expedited Approval

| To Chief Investigator or Project Supervisor: | Mr Dennis Ahnholdt |
| Cc Co-investigators / Research Students: | Mr Kyle Holmes |
| Re Protocol: | Modelling the drivers of habitual purchasing behavior in grocery shopping using partial least squares. |
| Date: | 23 Nov 2012 |
| Reference No: | H-2012-0371 |
| Date of Initial Approval: | 23 Nov 2012 |

Thank you for your Response to Conditional Approval (minor amendments) submission to the Human Research Ethics Committee (HREC) seeking approval in relation to the above protocol.

Your submission was considered under Expedited review by the Ethics Administrator.

I am pleased to advise that the decision on your submission is Approved effective 23-Nov-2012.

In approving this protocol, the Human Research Ethics Committee (HREC) is of the opinion that the project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research, 2007, and the requirements within this University relating to human research.

Approval will remain valid subject to the submission, and satisfactory assessment, of annual progress reports. If the approval of an External HREC has been noted the approval period is as determined by that HREC.

The full Committee will be asked to ratify this decision at its next scheduled meeting. A formal Certificate of Approval will be available upon request. Your approval number is H-2012-0371.

If the research requires the use of an Information Statement, ensure this number is inserted at the relevant point in the Complaints paragraph prior to distribution to potential participants. You may then proceed with the research.
APPENDIX B: SURVEY INSTRUMENT ITEMS

Table of items used in online survey and associated literature references as well as image presented to respondents for the basket control question.
<table>
<thead>
<tr>
<th>Construct</th>
<th>Indicator Label</th>
<th>Indicator text</th>
<th>Literature reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of items used in online survey and associated literature references.</td>
<td>Costs is always similar</td>
<td>How likely is it that the overall cost of your groceries is similar each time you undertake your grocery shopping?</td>
<td>Monroe and Lee (1999)</td>
</tr>
<tr>
<td></td>
<td>Shop on the same day</td>
<td>How likely is it that you complete the grocery shopping on the same day of the week?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shop at the same time</td>
<td>How likely is it that you complete the grocery shopping at the same time of the day?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engage in HGPB</td>
<td>Definition provided to: Habitual purchasing behavior is a consumption process where consumers select and purchase products primarily out of habit rather than by thoroughly considering the value of a product in-store or comparing other product choices whilst grocery shopping.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rely on routine</td>
<td>To what extent do you agree that you rely on habits, such as shopping at the same store and same time of the week to complete your grocery shopping?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular price low</td>
<td>To what extent do you agree that at the supermarket you frequent the most for groceries the regular prices [e.g. without special offers] are low for the products you purchase?</td>
<td>Zielke, (2006, pg.302)</td>
</tr>
<tr>
<td></td>
<td>Certain about value</td>
<td>How likely is it that before undertaking the grocery shopping at the store you frequent the most you are certain about the general value you will get?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Odd price value</td>
<td>How likely is it that within the supermarket that you frequent the most, you perceive products with an odd price ending such as .99c or .95c as being offered at a good value?</td>
<td></td>
</tr>
<tr>
<td><strong>Social Environment</strong></td>
<td><strong>Shopping accompanied</strong></td>
<td>How likely is it that when you undertake the grocery shopping at the supermarket you frequent the most for groceries you are frequently accompanied by other people?</td>
<td></td>
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<tr>
<td>------------------------</td>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Closeness of accomp.</strong></td>
<td><strong>Stability of accomp.</strong></td>
<td>How likely is it that when undertaking the grocery shopping you are frequently accompanied by a person that you consider you are very close to? How likely is it that when undertaking the grocery shopping that your accompaniment arrangement for undertaking the grocery shopping are stable (e.g. always the same person / or always alone)?</td>
<td></td>
</tr>
<tr>
<td><strong>Crowds Frustrate</strong></td>
<td></td>
<td>To what extent do you agree that within the store you frequent the most for grocery shopping crowds make you feel frustrated?</td>
<td></td>
</tr>
<tr>
<td><strong>In-Store Value Image</strong></td>
<td><strong>Display consistency</strong></td>
<td>To what extent do you agree that within the store you frequent the most for your grocery shopping, the layout and arrangement of products is consistent?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Display quality</strong></td>
<td>To what extent do you agree that within the store that you frequent the most for grocery shopping, the presentation of products on shelves and displays is of a high quality?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Products in-stock</strong></td>
<td>To what extent do you agree that within the store that you frequent the most for your grocery shopping, the products you want to purchase are always in stock?</td>
<td></td>
</tr>
<tr>
<td><strong>Time Pressure</strong></td>
<td><strong>Availability of time</strong></td>
<td>To what extent do you agree that you have in general limited time available to complete the grocery shopping at the store that you frequent the most?</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Reardon et al., (2011)

Adapted from Beatty and Ferrell, (1998)
Basket image presented within the online survey. The image was used as the control question discussed in chapter 3.1. to assess the suitability of respondents.
APPENDIX C

Participant Information Statement presented at the start of the online survey
Information Statement for Research Project:
Modelling the drivers of habitual purchasing behavior

You are invited to participate in the research project titled 'Modelling the drivers of habitual purchasing behavior' which is being conducted by Mr Kyle Holmes from Newcastle Business School at the University of Newcastle and Dr Dennis Ahrholdt from Newcastle Business School at the University of Newcastle. The research is part of Kyle Holmes’ studies at the University of Newcastle, and is supervised by Dr Dennis Ahrholdt.

Why is the research being done?
The purpose of this research is to examine what drives your grocery shopping habits. Often consumers are unaware they purchase particular products whilst grocery shopping. This research will help to understand whether the retailer influences these purchase, or if the consumer's own background leads to such behavior.

Who can participate?
If you regularly undertake the grocery shopping and are over the age of 18 than you are an ideal candidate for this study.

What would you be asked to do?
Participation in this research project involves completing an online survey. No personally identifiable information is captured in the survey. At the end of the you will be provided with details on how you can enter a prize draw to win 1 of 5 $20 shopping vouchers at either Coles or Woolworths.

What choice do you have?
Participation in this study is voluntary. You should not feel obliged to participate.

How much time will it take?
The survey will take about 10 minutes.

What are the risks and benefits of participating?
There are no direct benefits or anticipated risks in participating, however You may gain an insight into how you undertake grocery shopping.

How will your privacy be protected?
The questionnaire is anonymous and it will not be possible to identify you from your answers. If you submit your email address to enter the random draw to win a shopping voucher, you will only be contacted if you are successful. All data collected will be held on a secure external hard disk for 5 years, accessible only by the project researchers.
How will the information collected be used?
The data collected from the questionnaire will be used as part of a thesis to be submitted for Mr Kyle Holmes’s Doctor of Business Administration degree and will also be used in a paper to be submitted to a scientific journal. Results of the study will be available to participants. Requests can be made when submitting an entry to the prize draw.

What do you need to do to participate?
Please read this Information Statement and be sure you understand its content before you consent to participate. If there is anything you do not understand, or you have questions, contact the researcher.

If you would like to participate, please click the ‘next’ button below to begin the questionnaire.

Further Information
If you would like further information please contact Dr Dennis Ahrholdt.
Thank you for considering this invitation.

Regards,
Dr Dennis Ahrholdt
www.newcastle.edu.au/school/business
Dennis.Ahrholdt@newcastle.edu.au

This project received approval from the University of Newcastle’s Human Research Ethics Committee on 23rd November, 2012, Approval No. H-2012-0371. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 4921 6333, email Human-Ethics@newcastle.edu.au