Nexus Between In-Store Design Cues and Impulse Purchasing Behavior at Supermarkets in Yaoundé, Cameroon. Do Gender and Age Matter?

Fidelis Vernyuy Sigimi[1*], Urie Eleazar Jumbo[2] & Elizabeth Ankiambom Chiatii[3]

[1]Department of Management and Marketing, Faculty of Economics and Management, The University of Bamenda, Bambili, Bamenda, Northwest Region, Cameroon

[2]Department of Economics, Faculty of Economics and Management Sciences, The University of Bamenda, Bambili, Bamenda, Northwest Region, Cameroon

[3]Catholic University of Cameroon (CATUC), Bamenda, Northwest Region, Cameroon

**Corresponding author: fidelisvernyuy@gmail.com*

Citation: Sigimi, F.V., Jumbo, U.E., & Chiatii, E. A. (2024). Nexus Between In-Store Design Cues and Impulse Purchasing Behavior at Supermarkets in Yaoundé, Cameroon. Do Gender and Age Matter*? Business Perspective Review 5(2),* 12-27. https://doi.org/10.38157/bpr.v5i2.598.

Research Article

Abstract

Purpose: *This study seeks to assess the relationship between in-store design cues (store layout, product placement, signage, and point of sales display) and impulse purchase behavior at supermarkets in Yaoundé, Cameroon. It also explores the moderating effects of age and gender on this relationship.*

Methods: *The study adopted a quantitative design with the help of a model with four exogenous variables, two moderating variables, and one endogenous variable adapted from the stimulus organism response (S-O-R) model of Zajonc (1980). The questionnaires were administered both physically and online to 429 shoppers from four selected supermarkets. The multiple correspondence analysis was used to construct indexes for store layout, product placement, signage, and point of sales display. The ordinary least square estimation technique was used to test the hypotheses of the study. The moderating effects of gender and age were done by interacting the two moderating variables with the components of in-store design cues.*

Results*: Results revealed that layout quality and point of sales display exerted significantly positive effects on shoppers' impulse purchasing behavior while signage and product placement had a positive but insignificant effect on customers' impulse purchasing behavior. The results also revealed a negative but insignificant moderating effect of gender while the moderating effect of age was positive and significant. An overall significant effect of design cues implies that the in-store design cues were found to be attractive and stimulating by the customers.*

Implications*: The study therefore concluded that an improvement in the store design features will act as a significant stimulus for customers' increased impulse purchases. This study has significant practical and theoretical implications in the area of consumer behavior in the context of developing countries, like Cameroon.*

Keywords: Design Cues, Layout, Product Placement, Point of Sales Display, Signage

1. Introduction

The present business environment in Cameroon is changing and this has resulted in tremendous changes in retailing. One reason is the increase in online retailing. Customers now have a choice and preference to choose the channel of their choice and this stiff competition has greatly reduced the profit margins of several retailers. To adapt to the changing business environment, retailers need to develop strategies to increase

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

footfall and increase their loyal customer base. This can be achieved by focusing on increasing the level of shopper satisfaction which can result in impulse purchases. There are several parameters associated with shopper satisfaction in a retail environment. One of such parameters is the store design (Gogoi, 2017). Cameroon has been the distribution hub for Central Africa. According to Trading Economics, the retail sector's contribution to the GDP of Cameroon was 4.3% in 2020 and was projected to be 4.5% in 2021 (Trading Economics, 2021). However, the COVID-19 pandemic had a significant impact on the retail sector in Cameroon, with many businesses facing challenges due to lockdowns and reduced consumer spending. "Yaoundé" is a dynamic and growing city, with a rich history, culture, and natural beauty. Its role as the political and administrative capital of Cameroon, as well as its diverse economic activities, makes it an important city in the region. This has also produced a harmoniously interwoven mesh of activities and operations that has attracted a lot of supermarkets to the city such as Mahima, Super U, Casino, Dovv, and Santa Lucia, just to name a few.

Nowadays, consumers ask for added beneficial elements to select retail outlets for their purchases. A pleasant shopping environment of retail chain outlets is one of those elements which are extremely desired. Retail chain outlets are gradually replacing small traditional retailers. The success of the retail chain industry in comparison to traditional retailers is attributed to convenience, choice of goods, huge space, and low prices (Turley & Milliman, 2000). To attract shoppers, retailers are restructuring their outlets in tune with the changing retail landscape. The retail environment can create an atmosphere that attracts shoppers. The store design can have an impact on the shopper's perception too. Usually, big retail outlets have an impression to accommodate a large number of shoppers inside the store, are comfortable, and with a large variety of products. Whereas a small retail outlet may be perceived to be compact and less spacious, with less variety of products available. A good and appealing store design may inspire customers to visit the store. The store atmosphere also plays an important role in keeping the shoppers longer inside the store and busy with browsing and shopping which can result in impulse purchases (Bellizzi & Hite, 1992). Store environment elements are communicated by in-store design, which includes the layout of the store, the presentation of the products, and the allocation of the store space, signage, and point-of-sales displays (Zentes *et al.*, 2017).

Studies suggest that various store design cues, such as floor patterns, store layout, product placement, and signage can significantly influence consumers' impulse purchasing behavior (Liu *et al,* 2021; Kim & Kim, 2020; Chen & Huang, 2018; Inman & Winer, 1999) and that this relationship can be moderated by age and gender (Kim & Kim, 2018; Liu & Jang (2019). Store design cues present challenges to supermarkets in Cameroon in terms of creating a shopping environment that promotes impulse buying behavior while also being functional and efficient. Overcrowding creates negative shopping experiences and decreases the likelihood of impulse buying behavior. Equally, some supermarkets do not also consider the needs of all consumers, including those with disabilities or mobility issues. This renders their store design inaccessible and not accommodating for all consumers. a review of empirical works suggests that while there has been some progress in the field, there are still some gaps. Firstly, most of the studies were conducted in a retail store, which may limit the generalizability of the findings to other contexts. Additionally, the authors did not measure individual differences in consumers. secondly, most of the studies have been conducted in Western cultures, and it is unclear whether the findings can be generalized to other cultures with different shopping behaviors and norms like Cameroon. This study therefore seeks to contribute to consumer behavior literature by investigating the relationship between in-store design cues (layout, product placement, signage, and point of sales display) and impulse purchasing behavior at supermarkets in Yaoundé while equally examining the moderating role of demographic variables (age and gender) on this relationship. This will provide supermarkets with valuable insights on how to design store environments

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

that promote impulse purchases while also promoting long-term goal attainment. This study is, therefore, set out to answer the following research questions:

a. What is the influence of store layout on shoppers' impulse purchasing behavior at supermarkets in Yaoundé?
b. How does product placement influence shoppers' impulse purchasing behavior at supermarkets in Yaoundé?
c. What is the influence of in-store Signage on shoppers' impulse purchasing behavior at supermarkets in Yaoundé?
d. Does point of sales display significantly influence shoppers' impulse purchasing behaviors at supermarkets in Yaoundé?
e. To what extent do age and gender moderate the relationship between in-store design cues and impulse purchasing behavior at supermarkets in Yaoundé?

2. Literature Review and Hypotheses Development

This section will consist of a review of the literature concerning design cues and impulse purchasing behavior as well as hypotheses development. The research framework of the study will be presented at the end of the section.

2.1. Conceptual Literature Review

2.1.1 In-store Design Cues

The retail store design is a well-planned strategy to set up a store in a particular way to optimize space and create an appealing atmosphere to enhance sales. The design factors are stimuli that exist at the forefront of our awareness, such as floor- and wallcovering, colors, cleanliness, aisles, layout, signs, etc. (Baker *et al.*, 1994). Some of these design factors communicate cues regarding the meaning of the store and the norms and expectations for the decision of the store (Bitner, 1992). Design factors can be measured in terms of large-small, roomy-cramped, colorful-drab, unattractive–attractive, dirty–clean, comfortable-uncomfortable, cluttered aisles–uncluttered aisles, crammed merchandise–well-spaced merchandise, and impressive interior-unimpressive interior and well-organized layout–unorganized layout. Additionally, design factors positively influence the pleasure of customers in a store (Sherman *et al.*, 1997). Turley and Milliman, (2000) revealed that a circular or meandering store layout may encourage shoppers to explore the store and spend more time browsing. Placing high-margin products at eye level or near the checkout counter can encourage impulse purchases (Inman & Winer, 1999). Equally, research has found that larger stores may encourage shoppers to spend more time browsing, while smaller stores may create a sense of urgency and encourage shoppers to make a purchase (Chebat &Michon, 2003). Inman and Winer, (1999) also revealed that the display of impulse items near the checkout counter can encourage shoppers to make an additional purchase.

2.1.2. Impulse Purchasing Behavior

While making an impulse purchase, the search for information as well as the evaluation of possibilities in the purchasing process are sometimes overlooked or completely forgotten. Bell, Corsten & Knox, (2011) as well as Hui, *et. al.*, (2013) implicitly defined impulse purchasing or unplanned buying behavior as the shopping practices that are the results of exposure to in-store stimuli by which customers may have newly created needs and/or be reminded for temporarily forgotten needs. Inman *et al*, (2009) on their part defined unplanned buying behavior as purchasing without a specific plan before the shopping event. Some prior studies also revealed that unplanned buying is relevant to emotional response (Talukdar & Lindsey, 2013; Verplanken & Sato, 2011). Thus, this study adapted the previously specified definitions to scope the meaning of unplanned buying behavior as the purchases for product categories or items without a plan before going to the store. Concerning this adapted definition, the current research can expand the knowledge

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

of unplanned buying behavior to cover out-of-store and in-store stimuli and emotional and non-emotional responses to the purchase behavior.

Han *et al*. (1991), classified impulse buying into five types including**:** pure impulse purchases which are unplanned purchases that are made on the spur of the moment. According to a study by Suri and Monroe (2003), pure impulse purchases are often driven by emotional factors such as excitement or desire, rather than rational decision-making. This is followed by reminder impulse purchases which occur when a shopper sees a product that reminds them of a need or desire that they had forgotten about. Rook and Fisher (1995), stipulated that reminder impulse purchases are often triggered by situational factors such as store layout or product placement. We also have planned impulse purchases which consist of those purchases that were not on a shopper's original shopping list but were added to the list during the shopping trip. According to a study by Beatty and Ferrell (1998), planned impulse purchases are often driven by a desire to try new products or take advantage of special promotions. We also have bargain impulse purchases which occur when a shopper sees a product that is on sale or offered at a discounted price and decides to make an unplanned purchase to take advantage of the deal. According to a study by Kacen and Lee (2002), bargain impulse purchases are often driven by a desire to save money or get a good deal. Lastly, suggestion impulse purchases occur when a shopper is influenced or persuaded by a sales associate or promotional material to make an unplanned purchase. According to a study by Chevalier and Mazzalovo (2012), suggestion impulse purchases are often driven by social factors such as trust in the salesperson or peer pressure.

Impulse buying behavior is a complex phenomenon that can be influenced by a variety of internal and external factors. The internal element concerns the customer's mental processes that lead to impulsive purchases and are of two types emotional arousal and personal factors. Studies have shown that emotions such as excitement, happiness, and stress can all increase the likelihood of impulsive purchases (Rook & Fisher, 1995; Tifferet & Herstein, 2012). Personal factors such as personality traits, values, and goals can also influence impulse purchasing behavior. For example, a consumer who is high in extraversion or low in self-control may be more likely to engage in impulse purchasing behavior (Dittmar *et al.*, 1996; Verplanken & Herabadi, 2001).

On the other hand, the external factor concerns the context in which the consumer finds himself, requiring the impulsive purchase (Marthur, 2019). Some key external determinants of impulse purchasing include social influence, store characteristics, situational factors, product characteristics, online shopping, and consumer demographics. Consumers may make unplanned purchases because they are influenced by the behavior or opinions of others (Bearden & Etzel, 1982; Sen & Lerman, 2007). Store characteristics, such as store layout, product placement, and in-store promotions, can also influence impulse buying behavior (Verplanken & Herabadi, 2001). Situational factors such as time pressure, availability of funds, and product scarcity can also influence impulse purchasing behavior (Suri & Monroe, 2003; Rook & Fisher, 1995). equally product characteristics such as visual appeal, price point, and perceived value can also be determinants of impulse purchasing behavior (Verplanken & Herabadi, 2001; Suri & Monroe, 2003). Impulse buying behavior can also occur in online shopping contexts, where it is influenced by factors such as website design, product presentation, and social influence (Huang & Kuo, 2013) lastly, impulse buying behavior has also been found to vary across consumer demographics, such as age, gender, and income level (Dittmar *et al.*, 1996). For example, a study by Mai *et al.* (1998) found that younger consumers were more likely to engage in impulse buying behavior than older consumers. Overall, impulse purchasing behavior is a complex phenomenon that is influenced by a variety of factors. It should be noted that this behavior occurs in stages.

Impulse purchasing behavior can be broken down into several stages, including pre-purchase, purchase, and post-purchase. It has been shown that when a client makes an impulsive purchase, the customer's purchase decision process shortens, and the purchases are made with less thinking. When a customer makes

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

a routine purchase, they often follow the stages in the purchase decision process (Chang *et al.* 2014). The pre-purchase stage of impulse purchasing behavior involves the consumer becoming aware of a product and experiencing an emotional response to it. This is followed by the purchase stage which involves the actual act of making an unplanned purchase. This stage is often characterized by spontaneity and a lack of pre-planning and may involve the consumer making a quick decision based on emotional arousal or situational factors (Verplanken & Herabadi, 2001; Suri & Monroe, 2003). Lastly, we have the post-purchase stage which involves the consumer evaluating their purchase and experiencing feelings of satisfaction or regret. This stage may also involve the consumer seeking validation for their purchase, such as by sharing it on social media or seeking feedback from friends and family (Dittmar *et al.*, 1996; Kim & Park, 2013). Overall, the stages of impulse purchasing behavior are characterized by emotional arousal, spontaneity, and a lack of pre-planning. Retailers can use this knowledge to design store layouts, promotions, and product displays that encourage impulse purchasing behavior and increase sales.

2.2. Hypotheses Development

Some studies have addressed the relationship between store environment design cues and the impulse purchasing behavior of shoppers.

2.2.1. Store layout and impulse purchasing behavior

Research by Zhang and Chen (2022) on the effects of store design on impulse buying, and how consumer shopping motivation moderates this relationship showed participants who perceived the store design features such as the layout as attractive and pleasant reported higher levels of impulse buying than those who did not. Equally, Jeon and Lee (2018) investigated the effects of store layout and ambient scent on consumer behavior and the results of the study showed that store layout had a significant effect on consumer behavior. On the contrary, Huang and Huang, (2020) revealed that store layout cues that are too complex or confusing can also present challenges to retailers. Consumers may become overwhelmed by the number of products and displays, leading to decreased impulse buying behavior. We therefore hypothesize as follows.

H1: Store layout significantly influences shoppers' impulse purchasing behavior at supermarkets in Yaoundé.

2.2.2. Product placement and signage and impulse purchasing behavior

Equally Liu *et al*, (2021) investigated the effect of store design on impulse buying in a real-world setting, using a field experiment. The results of the study showed that store design elements such, as product placement and signage had a significant positive effect on impulse buying and that mood and arousal mediated the relationship between store design and impulse buying. This is supported by Kim and Kim (2020) who did a meta-analysis of the empirical literature of 81 studies 1990 and 2019 on the effects of store design on consumer behavior and found that store design factors such as product placement and signage had a significant impact on various consumer behavior, including purchase intention, actual purchase behavior, and time spent in the store and that this relationship was mediated by individual differences in consumer characteristics, such as personality and shopping motivations, as well as situational factors, such as time pressure and task complexity. We, therefore, consider the following hypotheses.

H2: Product placement significantly influences shoppers' impulse purchasing behavior at supermarkets in Yaoundé.

H3: In-store Signage significantly influences shoppers' impulse purchasing behavior at supermarkets in Yaoundé.

2.2.3. Point of sales display and impulse purchasing behavior

Chen and Huang's (2018) comprehensive review of 134 studies published between 1990 and 2017 on the impact of store design on consumer behavior revealed that store design elements such as signage and point-

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

of-sales displays had a significant impact on various consumer behaviors, including purchase intention, actual purchase behavior, and time spent in the store and that this relationship was moderated by individual differences in consumer characteristics, such as personality and shopping motivations, as well as situational factors, such as time pressure and task complexity. Point-of-sale displays can influence consumer behavior by highlighting products and promotions. For example, a display of impulse items near the checkout counter can encourage shoppers to make an additional purchase (Inman & Winer, 1999).
H4: Point of sales display significantly influences shoppers' impulse purchasing behaviors at supermarkets in Yaoundé.

2.2.4. Moderating effect of gender and age

Research has also shown that the impact of store environment cues on impulse purchasing behavior may differ between genders and ages. Kim and Kim, (2018) in their study revealed that women were more influenced by store layout and product displays, while men were more influenced by sales promotions and special offers. Age may also moderate the relationship between store environment cues and impulse purchasing behavior. Liu and Jang (2019) revealed that younger consumers were more influenced by social media-based cues, while older consumers were more influenced by traditional store environment cues such as music and lighting.
H5: There exists a significant moderating effect of gender on the relationship between in-store design cues and impulse purchasing behavior at supermarkets in Yaoundé.

H6: There exists a significant moderating effect of age on the relationship between in-store design cues and impulse purchasing behavior at supermarkets in Yaoundé.

2. 3. Research Framework

Based on our hypotheses, we develop the following research framework, that illustrates the relationship between variables.

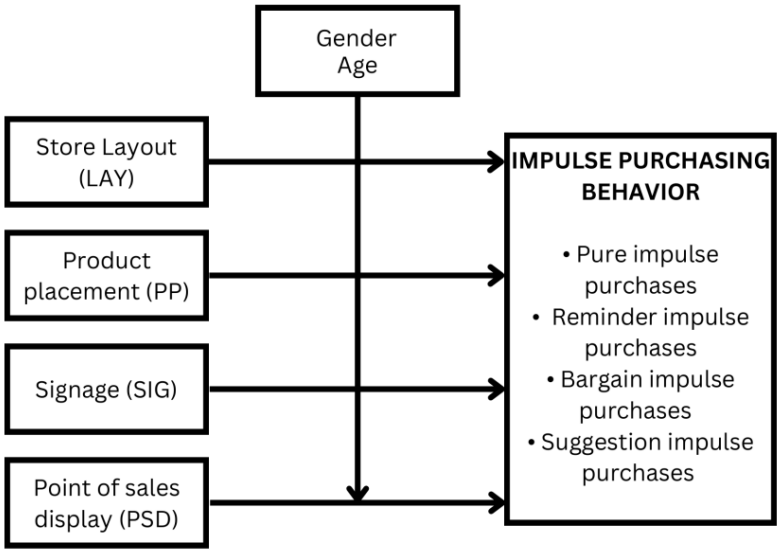

Fig. 1: Research Framework
Source: Adapted from the model Baker *et al* (2002)

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

3. Methodology

This section presents the methodology adopted by the study including the research design, sample size and sampling technique, model specification, techniques of data analysis, validity and reliability of the research instruments as well as ethical considerations.

The study adopted a quantitative design comprising surveys and causal research design due to their appropriateness in the presentation of a specific state of affairs and description of the effect of in-store environment cues on impulse purchasing behavior. This study draws inspiration from the stimulus organism response (S-O-R) model of Zajonc (1980). The model proposes that external stimuli (S) are processed by the individual's perceptual and cognitive processes (O), which in turn determine the individual's response (R) to the stimulus. It assumes that external stimuli, such as product placement, marketing messages, signage, layout, or product displays, can be designed in a way that triggers certain internal processes or responses in consumers such as attention, perception, and emotions (Bitner, 1992; Kotler, 2012). The S-O-R model also suggests that the response of the consumer is influenced by both organism and stimulus variables, and can be behavioral, cognitive, or affective in nature. Impulse purchasing behavior can thus be considered a behavioral response to store environment cues that trigger certain internal processes in the consumer (Peter & Olson, 2008).

This study adopted a model with four indicators of design cues as seen in Figure 1: Store Layout (LAY), Product placement (PP), Signage (SIG), and point-of-sales display (PSD). Impulse purchasing behavior was captured in terms of pure impulse purchases, reminder impulse purchases, bargain impulse purchases, and suggestion impulse purchases**.** This model also assumes that the relationship between design cues and impulse purchasing behavior is moderated by demographic variables (age and gender). Based on the model of Baker (1987), we specify the econometric model of this study. The model is specified as follows:

$$IPB_i = IPB_i = \beta_0 + \beta_1 LAY_i + \beta_2 PP_i + \beta_3 SIG_i + \beta_4 PSD_i + \beta_5 SEX_i + \beta_6 AGE_i + \varepsilon_{1i} \quad (1)$$

In order to investigate the moderating effect of gender (precisely female gender) on the relationship between in-store design cues and customers' impulse purchasing behavior, we used the model of Kim and Park (2018) to build the following model:

$$IPB_i = \gamma_0 + \gamma_1 DC_i + \gamma_2 SEX_i + \gamma_3 AGE_i + \gamma_4 DC * SEX_i + \mu_{1i} \quad (2)$$

Similarly, to examine the moderating effect of shoppers' age on the effect of in-store design cues on the impulse purchasing behavior of shoppers, we used the Ryu *et al.*, (2023) study to build the following model.

$$IPB_i = \theta_0 + \theta_1 DC_i + \theta_4 SEX_i + \theta_5 AGE_i + \theta_8 DC * AGE_i + \mu_{2i} \quad (3)$$

NB: IPB_i= impulse purchasing behavior; βi, γ_i & θ are parameters to be estimated; DC*SEX is the interaction variable between in-store design cues and female gender; DC*AGE is the interaction variable between in-store design cues and various age groups.

The target population was shoppers in supermarkets in Yaoundé. The study relied on primary data collected using structured questionnaires administered to the shoppers both physically and online. The questionnaire was designed in three sections. Section A consisted of demographic information, and section B looked at the indicators of In-store design cues (layout, product placement, signage, and point of sales displays). Layout was measured in terms of the flow and traffic patterns in the supermarket, Fixtures in the store, such as shelving units, racks, and display stands, customer seating or rest areas, and the sufficiency of space in-store. Product placement was captured in terms of categorization and product adjacency, prime locations, noticeability and accessibility of shelves, strategic placement of related or complementary products as well as the aesthetic and visually appealing manner of the product placement. In-store signage was captured in terms of the simplicity of content, the strategic placement of signs in entranceways, aisles, product displays, and checkout counters, and the consistency and uniformity of signs throughout the supermarket. Point of sale displays was captured in terms of seasonality and promotional nature of displays, existence of sampling and demo stations in the store, the positioning of the POS displays, their visually appealing and attention-

Published by *Research & Innovation Initiative Inc.*, registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

grabbing nature, the use of Logos, slogans, and brand colors in POS displays. Lastly, section C consisted of elements of impulse purchasing behavior. It was captured in terms of shoppers coming across products while shopping and deciding to purchase them on a whim without considering them beforehand, shoppers adding extra items to their cart during the shopping process, shoppers being by swayed by appealing product features to upgrade their choices and buy a higher-priced or premium version of the products, shoppers succumbing to the temptation of impulsive snack purchases of items strategically placed near checkout counters while waiting in line to pay, shoppers being influenced by the sense of urgency created by limited-time promotions in the supermarket as well as shoppers buying out of excitement and happiness when in the store.

The questionnaire was imputed into "formsapp" an online survey application and a link was generated and shared with participants. The researcher ensured that participation in the study was voluntary, the responses of shoppers were kept confidential, and their identities were kept anonymous. Those who indicated their willingness to participate in the study were shared the questionnaires for completion. A Likert scale of 1-5 was used where 1 represents Strongly Disagree, and 5 represents Strongly Agree. Among 450 sampled questionnaires, 429 were returned. Collected data was coded into SPSS version 21 for analysis. The first-hand data were analyzed both descriptively and inferentially. The multiple correspondence analysis was used to construct indexes for in-store layout, product placement, and point-of-sales displays. later on, the ordinary least square estimation technique was used to test the hypotheses of the study. In order to examine the moderating effect of demographic factors (namely gender and age of shoppers) on the relationship between in-store ambient cues and shoppers' impulse purchasing behavior in supermarkets in Yaoundé, the researcher interacted the two moderating variables with the components of in-store ambient cues (layout, product placement, and point of sales displays indexes)

The four variables of the model were used to examine the 429 responses using Cronbach's α. The reliability test was used to determine the internal consistency of the constructs in the model. In an attempt to perform this, Cronbach's Alpha was used with an accepted threshold of at least 0.7 as shown in Appendix 1 below. The internal consistency of the participants was not violated for any of the variables as Cronbach Alpha coefficient values ranged between 0.7495 to 0.8017. These exceeded Chua (2006)'s recommended threshold of 0.60. Thus, the instruments and constructs were valid and reliable for the study.

4. Results

Results from descriptive statistics in Table 1 show that the sample was female-dominated given that 60.1% of the sample was made up of female shoppers corresponding to 258 out of the 429 respondents sampled as against 39.9% of male respondents that is 171 male shoppers.

Table 1: Demographic Profile of Respondents

Variables	Categories	Frequency	Percentage
Gender	Male	171	39.9%
	Female	258	60.1%
Age	Less than 20	57	13.3%
	[20 – 30[	273	63.6%
	[30 – 40[	69	16.1%
	[40 – 50[	17	4%
	[50 – 60[	6	1.4%
	60 and above	7	1.6%

Source: Field data collected by the authors, 2023

This suggests that women are more concerned with shopping in Yaoundé than men. Furthermore, the sample was dominated by shoppers of the age group 20 to 30 years as this category represents 63.6% (273)

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

of the total sample whereas 16.1% (69) were of the age range 30 to 40, 13.3% (57) for the age less than 20, 4% (17) for the age range [40 – 50[, 1.4% (6) for shoppers aged between 50 and 60 and 1.6% (7) for respondents 60 years old and above. This implies that most of the shoppers are very young. Equally, the models do not confirm the existence of multicollinearity given that the mean VIF (1.96) is less than the critical value of 2.5 as prescribed by Gujarrati (2004). Similarly, none of the individual VIFs exceeds 10 which further comforts the conclusion of no multicollinearity in the model (See Appendix 2).

Table 2: OLS Results for Disaggregated Composite Indexes

Variables	Components	Coef.	Std. Err.	t	P>t
In store design cues	Layout quality index	0.2189506***	0.0448632	4.88	0.000
	Product placement index	0.0139595	0.0876064	0.16	0.873
	Signage quality index	0.0289251	0.0614726	0.47	0.638
	Point of sale display index	0.2096539***	0.0523789	4.00	0.000
Gender	Female gender dummy	-0.0481887***	0.0167212	-2.88	0.004
Age	Age [20 – 30[	-0.0254803	0.0251937	-1.01	0.312
	Age [30 – 40[	0.0719486**	0.034902	2.06	0.040
	Age ≥40	0.1687347***	0.0468798	3.60	0.000
	_cons	0.2861286***	0.058274	4.91	0.000
R-squared		0.3999	Adj R-squared		0.3751
F(17, 411)		16.11	Prob > F		0.0000
Breusch-Pagan Chi2		0.01	Prob > chi2		0.9208

Note: *** p<0.01, ** p<0.05, * p<0.1

Source: Field data collected by the authors, 2023

Results of disaggregated composite indexes of design cues in table 2 reveal that the coefficient of layout index is positive (0.2189506) implying that a one-point increase in the layout index will generate about 0.22-point increase in shoppers' impulse purchasing behavior index at supermarkets in Yaoundé. In addition, this result is statistically significant at 1% level. Thus, shops layout significantly enhances shoppers' impulse purchasing behavior at supermarkets in Yaoundé. This permits us to accept hypothesis H1. In the same vein, the coefficients of product placement index and signage are all positive (0.0139595 and 0.0289251 respectively). These findings suggest more precisely that a unit point increment in product placement index will lead to 0.01-point increase in shoppers' impulse purchasing behavior while a unit point increase in signage index will result in about 0.03-point improvement in shoppers' impulse purchasing behavior at supermarkets in Yaoundé. However, both results are statistically insignificant. We thus reject hypotheses H2 and H3. Consistently with previous components of in store design cues, the coefficient of point-of-sale display is positive (0.2096539) indicating that a one-point increase in point-of-sale display will lead to about 0.21-point increase in shoppers' impulse purchasing behavior at supermarkets in Yaoundé. More to that, this outcome is statistically significant at 1% level. Therefore, we accept hypothesis H4 and conclude that point of sale display significantly improves shoppers' impulse purchasing behavior at supermarkets in Yaoundé.

A look at results from (1) in Table 3 shows that the coefficient of the interacting terms between in-store design cues and female is negative (-0.0292) which implies that the female waters down the positive effect of in-store design cues on shoppers' impulse purchasing behavior at supermarkets in Yaoundé. In effect, the

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

effect of in-store design cues on shoppers' impulse purchasing behavior moves from 0.504 to 0.493 (0.522 – 0.029). However, the moderating effect is statistically insignificant. We thus reject hypothesis H5.

Table 3: The moderating effect of gender on the relationship between in-store design cues and impulse purchasing behavior

	(0)	(2)
VARIABLES	ipbi	ipbi
In-store design index	0.504***	0.522***
	(0.0695)	(0.0982)
Female gender dummy	-0.0459***	-0.0363
	(0.0320)	(0.0321)
Age [20 – 30[dummy	-0.0351	-0.0354
	(0.0252)	(0.0253)
Age [30 – 40[dummy	0.0614*	0.0606*
	(0.0350)	(0.0351)
Age ≥40 dummy	0.199***	0.197***
	(0.0472)	(0.0481)
Design cues_female		-0.0292
		(0.112)
Constant	0.306***	0.300***
	(0.0406)	(0.0456)
Observations	429	429
R-squared	0.351	0.351
F-statistics	25.21	22.65
Prob > F	0.0000	0.0000
Breusch Pagan Chi2	1.58	1.35
Prob > chi2	0.2082	0.2461

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1, ipbi is impulse purchasing behavior, 0= model without moderation, 1= moderating effect of gender on design cues

Source: Field data collected by the authors, 2023

Results from (1) in Table 4 indicate that the effect of in-store design cues on shoppers' impulse purchasing behavior remains positive when interacting with age. Moreover, it should be noted this result is significant at a 1% level. Moreover, all three coefficients of the interaction terms are positive which implies that age groups stimulate (enhance) the positive effect of in store design cues on shoppers' impulse purchasing behavior. Specifically, the age group between 20 and 30 increases the effect of in-store design cues from 0.504 (see equation 0) to 0.575 (0.281 + 0.294). In addition, this moderating effect is statistically significant at a 5% level. Similarly, the age group [30 – 40[also enhances the positive effect of in-store design cues on shoppers' impulse purchasing behavior given that the coefficient of the interaction term is positive (0.310) and this result is significant at a 10% level. Further results show that the age group 40 and above moderate the effect of in-store design cues on shoppers' impulse purchasing behavior given that the coefficient of the interaction term is positive (0.276) but the moderating effect was found to be insignificant. Globally, the age of shoppers significantly enhances the effect of in-store design cues on shoppers' impulse purchasing behavior at supermarkets in Yaoundé.

From tables 3 and 4, the F-statistics is 25.21 before moderation, 22.65 for gender and 19.47 for age after moderation with a probability value of 0.000. This shows that the overall study is significant at 1% level of significance. Hence the study is 99% reliable and highly recommended for policy decision making.

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

Table 4: The moderating effect of age on the relationship between In-Store Design Cues and Impulse Purchasing Behavior

	(0)	**(1)**
VARIABLES	ipbi	ipbi
In store design index	0.504***	0.281**
	(0.0695)	(0.118)
Female gender dummy	-0.0459***	-0.0446**
	(0.0171)	(0.0173)
Age [20 – 30[dummy	-0.0351	-0.143***
	(0.0252)	(0.0540)
Age [30 – 40[dummy	0.0614*	-0.0531
	(0.0350)	(0.0728)
Age ≥40 dummy	0.199***	0.0920
	(0.0472)	(0.110)
Design cues_Age [20 – 30[		0.294**
		(0.132)
Design cues_Age [30 – 40[		0.310*
		(0.181)
Design cues _age ≥40		0.276
		(0.237)
Constant	0.306***	0.391***
	(0.0406)	(0.0549)
Observations	429	429
R-squared	0.351	0.360
F-statistics	25.21	19.47
Prob > F	0.0000	0.0000
Breusch Pagan Chi2	1.58	0.34
Prob > chi2	0.2082	0.5591

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1, ipbi is impulse purchasing behavior, 0= model without moderation, 1= moderating effect of age on design cues

Source: Field data collected by the authors, 2023

For the test of multiple determination, the value of R-squared is 0.351 before moderation and 0.360. This is another condition of moderation which is fulfilled (R-squared has increased). This implies that other factors have a greater influence that are not highlighted in the model. Thus, change in the shoppers' impulse purchasing behavior is influenced by 35.5 % combined change in all the independent variables used and 64.5% change in shoppers' impulse purchasing behavior caused by other variables not indicated in the model. In all our results, the Breusch Pagan Chi2 test results do not allow us to reject the null hypothesis of homoscedasticity. Therefore, the models specified do not suffer from the problem of heteroscedasticity.

5. Discussion

Going by the results, it was found that layout quality and point of sales display quality exert a significantly positive effect on shoppers' impulse purchasing behavior while signage and product placement had a positive but insignificant effect on customers' impulse purchasing behavior. These results are in line with expectations and suggest that an increase in the quality of supermarket layout and point of sales display will significantly stimulate shoppers' unintended purchases. These findings thus confirm the stimulus organism response (S-O-R) model of Zajonc (1980) which stipulates those external stimuli, such as product placement, marketing messages, signage, layout, or product displays, can be designed in a way that triggers certain internal processes or responses in consumers such as attention, perception, and emotions.

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

A positive and significant effect of in-store design cues on customers' impulse purchasing behavior in Yaounde supermarkets simply implies that the in-store design cues were found to be attractive and stimulating by the customers. As such it causes them to purchase sometimes more than what they plan to. This result conforms to the findings of Zhang and Chen (2022) and Liu, *et al.,* (2021) who found that store design had a significant positive effect on impulse buying. Specifically, participants who perceived the store design as attractive and pleasant reported higher levels of impulse buying than those who did not. This result also falls in line with the finding of Chen and Huang (2018) who conducted a comprehensive review of the empirical literature on the impact of store design on consumer behavior and found that store design had a significant impact on various consumer behavior, including purchase intention, actual purchase behavior, and time spent in the store. Store design elements such as layout, size, product placement, and point of sales display were found to influence consumers' emotional and cognitive responses, which in turn influenced their behavior. Thus, the findings suggest that an improvement in the quality of the layout and point of sales display will act as significant stimuli for customers' increased purchase.

According to the result from the moderating effect of gender, the female gender negatively moderated the relationship between design cues and impulse buying behavior. However, this result was found to be statistically insignificant. This result contradicts the finding of Ryu, *et al.*, (2018) whose study revealed that gender positively moderated the relationship between environmental cues and impulse buying impulse buying as it was stronger for men than for women. This result can be explained by the fact that the sample was mainly female-dominated and, it reveals that the sensitivity of shoppers to in-store environment cues does not depend on the gender of the customers.

Furthermore, the results reveal a global significant effect of age on the relationship between in-store design cues and shoppers' impulse purchasing behavior. This result confirms the findings of Ryu, *et al.,* (2023) who found that store design cues have a significant impact on impulse purchasing behavior, and that the effect was moderated by age, with younger consumers being more influenced by design cues. This outcome also conforms to the finding of Huang and Chen (2019) who identified several moderating factors that can influence the strength of the relationship between store environment and consumer behavior such as age, gender, and personality, as well as situational factors, such as time pressure and social presence.

6. Conclusion and Policy Implications

This study had as its primary objective to investigate the relationship between in-store design cues and impulse purchasing behavior. To achieve this, the study adopted a quantitative design comprising surveys and causal research design and employed an adapted model from the stimulus organism response (S-O-R) model of Zajonc (1980) to guide the research process. Overall, design cues were found to have a significant impact on impulse purchase decisions. Layout quality and point of sales display exerted significantly positive effects on shoppers' impulse purchasing behavior while signage and product placement had a positive but insignificant effect on customers' impulse purchasing behavior. An overall positive and significant effect of design cues implies that the in-store design cues were found to be attractive and stimulating by the customers thus causing them to purchase sometimes more than what they planned to. The study therefore concludes that an improvement in the quality of layout and point of sales display will act as significant stimuli for customers' increased impulse purchases and that this relationship is significantly moderated by age and gender. This study recommends that supermarkets should optimize the store layout to facilitate a smooth flow of traffic and strategically guide shoppers through different sections. They should consider placing high-margin and impulse-buy products in high-visibility areas, such as end caps, near checkout counters, or at eye-level shelves, and create clear pathways that lead shoppers past these strategically placed products, increasing the likelihood of impulse purchases. Strategically position point-of-sale displays that can showcase small, affordable, and impulse-buy items such as candies, magazines, or

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

novelty products to capture shoppers' attention and encourage last-minute purchases, tailor the store layout to accommodate the preferences and needs of different age groups and optimize product placement and visual merchandising to align with gender preferences. This study has significant practical and theoretical implications in the area of consumer behavior in the context of developing countries like Cameroon. This study is therefore a major step in consumer behavior literature in developing countries as it tests the applicability of the in-store design cues model within an African retailing context, considering the existence of societal peculiarities and cultural differences.

7. Limitations and directions for future study

However, the study is not void of limitations. The first limitation stems from the fact that the findings are based on a study conducted among shoppers from four selected supermarkets in one city (Yaounde). As such for the results to be generalized, a study including all supermarkets in all the cities of Cameroon study should be conducted. Equally, the other variables found in Kotler's (1974) atmospherics model such as in-store ambient cues and social cues were not used, and future studies could include these in their investigations.

Authors' Contributions: Fidelis Vernyuy Sigimi conceived the idea, reviewed the literature, analyzed the data, and prepared the first draft. Urie Eleazar Jumbo did the econometric analysis, supervised, and finally edited the paper. Akiambom Elisabeth reviewed the paper and suggested improvements. All authors approved the final version of the manuscript.

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

Baker, J., Grewal, D., & Parasuraman, A. (1994). The influence of store environment on quality inferences and store image. *Journal of the academy of marketing science*, *22*(4), 328-339.

Bearden, W. O., & Etzel, M. J. (1982). Reference group influence on product and brand purchase decisions. *Journal of Consumer Research*, *9*(2), 183-194.

Bell, D. R., Corsten, D., & Knox, G. (2011). From Point of Purchase to Path to Purchase: How Pre-shopping Factors Drive Unplanned Buying. *Journal of Marketing*, *75*, 31-45. https://doi.org/10.1509/jm.75.1.31

Bellizzi, J. A., & Hite, R. E. (1992). Environmental color, consumer feelings, and purchase likelihood. *Psychology & Marketing*, *9*, 347-363.

Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, *56*(2), 57-71.

Chebat, J.-C., & Michon, R. (2003). Impact of ambient odors on mall shoppers' emotions, cognition, and spending: A test of competitive causal theories. *Journal of Business Research*, *56*, 529-539. https://doi.org/10.1016/S0148-2963(01)00247-8

Chen, Y., & Huang, L. (2018). The impact of store design on consumer behavior: A review of the empirical literature. *Journal of Retailing and Consumer Services*, *42*, 193-206.

Chevalier, J. A., & Mayzlin, D. (2006). The effect of word of mouth on sales: Online book reviews. *Journal of Marketing Research*, *43*(3), 345-354.

Chua, Y. P. (2006). Methods and Statistics Research: Book 1 Research Methods. Kuala Lumpur: McGraw Hill.

Dittmar, H., Beattie, J., & Friese, S. (1996). Objects, Decision Considerations and Self-Image in Men's and Women's Impulse Purchases. *Acta Psychologica*, *93*, 187-206. https://doi.org/10.1016/0001-6918(96)00019-4

Gogoi, B. J. (2017). Effect of Store Design on Perceived Crowding and Impulse Buying Behavior. *International Review of Management and Marketing*, *7*(2), 180–186.

Gujarati, D.N. (2004) Basic Econometrics. 4th Edition, McGraw-Hill Companies.

Han, Y. K., Morgan, G. A., Kotsiopulos, A., & Kang, P. J. (1991). Impulse buying behavior of apparel purchases. *Clothing and Textile Research Journal*, *9*(3), 15-21.

Huang, Y. C., & Kuo, Y. F. (2013). Antecedents and consequences of online impulse buying: A study of young Taiwanese consumers. *International Journal of Information Management*, *33*(1), 21-34.

Hui, S., Inman, J., Huang, Y., & Suher, J. (2013). The Effect of In-Store Travel Distance on Unplanned Spending: Applications to Mobile Promotion Strategies. *Journal of Marketing*, *77*, 1-16. https://doi.org/10.2307/23487410

J., Winer, R., & Ferraro, R. (2009). The Interplay Among Category Characteristics, Customer Characteristics, and Customer Activities on In-Store Decision Making. *Journal of Marketing, 73*, 19-29. https://doi.org/10.1509/jmkg.73.5.19
Jeon, J. Y., & Lee, K. H. (2018). The effects of store layout and ambient scent on consumer behaviors: A conceptual framework and empirical evidence. *Journal of Retailing and Consumer Services, 44*, 248-256.
Kacen, J. J., & Lee, J. A. (2002). The Influence of Culture on Consumer Impulsive Buying Behavior. *Journal of Consumer Psychology, 12*, 163-176. https://doi.org/10.1207/S15327663JCP1202_08
Kotler, P. (1973). Atmospherics as a marketing tool. *Journal of Retailing*, *49*(4), 48-64.
Kim, H. Y., & Park, J. W. (2013). The effects of website quality on online purchase intentions: Mediating effect of trust and moderating effect of culture. *International Journal of Information Management, 33*(1), 21-34.
Kim, Y. J., & Kim, J. (2020). Effects of environmental cues on consumer behavior: A meta-analysis. *Journal of Retailing and Consumer Services, 52*, 101927.
Kim, Y. J., & Kim, J. (2021). Effects of background music on consumer behavior: A meta-analysis. *Journal of Retailing and Consumer Services, 61*, 102543.
Liu, Y., & Jang, S. S. (2019). The effects of social media-based social support on consumers' impulse buying behavior in supermarkets. *Journal of Retailing and Consumer Services, 51*, 123-131.
Liu, Y., Chen, Y., & Huang, L. (2021). The effect of store design on impulse buying: Evidence from a field experiment. *Journal of Business Research, 133*, 754-763.
Mai, N. T. T., Jung, K., Lantz, G., & Loeb, S. G. (2003). An Exploratory Investigation into Impulse Buying Behavior in a Transitional Economy: A Study of Urban Consumers in Vietnam. *Journal of International Marketing, 11*(2), 13–35.
Rook, D. W., & Fisher, R. J. (1995). Normative influences on impulsive buying behavior. *Journal of Consumer Research, 22*(3), 305–313. https://doi.org/10.1086/209452
Sen, S., & Lerman, D. (2007). Why are you telling me this? An examination into negative consumer reviews on the web. *Journal of Interactive Marketing, 21*(4), 76-94.
Sherman, E., Mathur, A., & Smith, R. B. (1997). Store Environment and Consumer Purchase Behavior: Mediating Role of Consumer Emotions. *Psychology & Marketing, 14*, 361-378.
Suri, R., & Monroe, K. B. (2003). The effects of time constraints on consumers' judgments of prices and products. *Journal of Consumer Research, 30*(1), 92-104.
Talukdar, D., & Lindsey, C. (2013). To Buy or Not to Buy: Consumers' Demand Response Patterns for Healthy Versus Unhealthy Food. *Journal of Marketing*, *77*, 124-138. https://doi.org/10.2307/23487417
Tifferet, S., & Herstein, R. (2012). Gender differences in brand commitment, impulse buying, and hedonic consumption. *Journal of Product & Brand Management, 21*, 176-182. https://doi.org/10.1108/10610421211228793
Trading Economics (2021). https://tradingeconomics.com/cameroon/gdpInman.
Turley, L., & Milliman, R. (2000). Atmospheric Effects on Shopping Behavior: A Review of the Experimental Evidence. *Journal of Business Research, 49*, 193-211.
Verplanken, B., & Herabadi, A. (2001). Individual differences in impulse buying tendency: Feeling and no thinking. *European Journal of Personality, 15*(2), 71-83.
Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*, 151-175.
Zentes, J., Morschett, D., & Schramm-Klein, H. (2011). *Strategic Retail Management: Text and International Cases*, Springer. https://doi.org/10.1007/978-3-8349-6740-4.
Zhang, Y., & Chen, Y. (2022). Effects of store design on impulse buying: The moderating role of consumer shopping motivation. *Journal of Retailing and Consumer Services, 64*, 102916.

APPENDICES

Appendix 1: Cronbach's alpha test of reliability results

Layout	7	0.7841	Acceptable
Product placement	7	0.8017	Good
Signage	7	0.7495	Acceptable
Point of sales display	6	0.7679	Acceptable
Impulse purchasing behavior	7	0.7884	Acceptable

Source: Field data collected by the authors, 2023

Appendix 2: Variance inflation index

Product placement index	2.07	0.483310
Layout index	1.97	0.508838
Point of sale display index	1.91	0.524152
In store events index	1.88	0.531558
Mean VIF	1.96	

Source: Field data collected by the authors, 2023

Appendix 3 : Questionnaire

SECTION A : DEMOGRAPHIC INFORMATION

1. Gender of the respondent: (1) Male, (2) Female
2. Age of the respondent. (1) Less than 20 Years (2) [20-30] (3) [30-40] (4) [40-50] (5) [50-60] (6) [60-above]
3. How often do you go shopping in a week? (1) Once a week, (2) Twice a week, (3) Thrice a week, (4) more than three times a week

SECTION B: IN-STORE DESIGN CUES

	LAYOUT	**SA (5)**	**A (4)**	**N (3)**	**D (2)**	**SD (1)**
4	The flow and traffic patterns in the supermarket are logical and intuitive.					
5	The supermarket has a flexible store layout.					
6	Fixtures in the store, such as shelving units, racks, and display stands showcase merchandise effectively.					
7	The checking out of the store is very easy.					
8	Customer seating or rest areas in the store are very comfortable.					
9	There is sufficient space in-store for the flow of customers.					
10	The aisles and shelves are well-organized and easy to navigate.					
	PRODUCT PLACEMENT					
11	Merchandise in the supermarket are placed in product categories, and product adjacencies.					
12	Impulse-buy items are placed near the checkout.					
13	Popular products are placed in prime locations, such as near the entrance or at the end of the aisles.					
14	Products are placed on eye-level shelves and are easily noticed and accessible.					
15	Related or complementary products are strategically placed in proximity.					
16	The products in-store are easy to locate.					
17	The products are prominently displayed in an aesthetic and visually appealing manner.					

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

	SIGNAGE
18	The content of the signage in the supermarket is in simple language, bullet points, and visually appealing graphics.
19	Signs are strategically placed in entranceways, aisles, product displays, and checkout counters.
20	The brand's logo and colors are included in the signs in-store.
21	The signs in-store exhibit store hours, restroom locations, or directional arrows to different store sections.
22	Specific product information, features, or benefits are highlighted in the signs in-store.
23	The signage is consistent and uniform throughout the supermarket.
24	The signage in the store is clear and easy to understand.
	POINT OF SALE DISPLAYS
25	Seasonal and promotional displays are done in the supermarket.
26	Sampling and demo stations exist in the store
27	The POS displays in the supermarket are typically positioned near the checkout counters.
28	The design of POS displays in the supermarket is visually appealing and attention-grabbing.
29	Logos, slogans, and brand colors are used in POS displays in the store
30	The POS displays in the supermarket are strategically engaging and interactive.

SECTION C: IMPULSE PURCHASING BEHAVIOR

	Items	**SA (5)**	**A (4)**	**N (3)**	**D (2)**	**SD (1)**
31	You come across products while shopping and decide to purchase them on a whim, without considering it beforehand.					
32	At times you add extra items to your cart during the shopping process especially complementary products or promotions.					
33	You are always swayed by appealing product features to upgrade your choice and buy a higher-priced or premium version of a product.					
34	You succumb to the temptation of impulsive snack purchases of items strategically placed near checkout counters while waiting in line to pay.					
35	You are always influenced by the sense of urgency created by limited-time promotions, such as "buy one, get one free" in the supermarket.					
36	While shopping, you remember items you forgot to include on your shopping list or initially intended to buy on a different occasion.					
37	There are times you buy out of excitement and happiness when in the store.					