Exploring Consumers’ Impulse Buying Behavior on Online Apparel Websites: An Empirical Investigation on Consumer Perceptions

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ABSTRACT

In the information age, more and more people are buying products on the Internet. Impulsive buying within the online shopping research is gradually receiving more attention, as it contributes significantly to online retail profit. This study proposed a research model based on the Stimulus Organism Response (S-O-R) framework to finding the antecedents of consumer reaction and behavior, specifically to distinguish task-relevant stimuli (price attribute and convenience; i.e. TR cues) and mood-relevant stimuli (visual appeal, social influence, vendor creativity; i.e. MR cues), perceived usefulness and perceived enjoyment to explore which factors affect online impulse buying behavior. Data from 446 customers who bought apparel products online were collected to evaluate the research model.

The results indicate that convenience, visual appeal, social influence, and the vendor's creativity have a positive impact on perceived usefulness; price attribute, visual appeal, social influence, and the vendor's creativity have a positive impact on perceived enjoyment. The results also indicate that convenience and social influence are the two strongest predictors of perceived usefulness and perceived enjoyment respectively. Also, it was observed that impulse buying tendency and perceived enjoyment both significantly affect consumers’ urge to buy impulsively, whereas perceived usefulness indirectly influences consumers’ urge to buy impulsively through perceived enjoyment.

Keywords: Urge to buy impulsively, S-O-R framework, TR cues, MR cues, impulse buying tendency
1. INTRODUCTION

In recent years, more and more people are using online stores. Global sales in the e-retail industry will decelerate to a 16.5% growth rate in 2020 (down from 20.2% last year), a collective $3.914 trillion in ecommerce sales this year [1]. In 2020, Asia-Pacific and North America lead the regional totals for both retail and retail e-commerce sales, Asia-Pacific will account for 42.3% of retail sales worldwide, North America will capture 22.9%, and Western Europe will make up 16.2% [1]. This clearly shows that e-commerce is playing an increasingly important role in the retail industry. An interesting topic of interest in e-commerce research is impulsive buying. In the online shopping environment, online stores make shopping more convenient and provide a place for impulsive consumers to satisfy their shopping desires. Impulse buying, which is common among online shoppers, occurs when a consumer experiences a sudden, habitually powerful, and insistent urge to buy something [2, 3]. As online shopping websites are becoming more like physical shopping malls [4], all kinds of different promotional stimuli are likely to trigger impulsive buyers. Research shows that about 40% of all online expenditures are coming from impulse buying [5]. Similarly, a 2015 survey showed that 83% of online consumers expressed that they had an impulse buying experience [6]. It is clear that the online shopping environment contributes significantly to profits for the retailers; hence, it is important to understand online impulse buying phenomena. Previous research on impulse buying focused mainly focused on two different views: a shopping environment [7] and personal characteristics [8]. Eroglu et al. [9] emphasized the online shopping environment factors affecting individual internal cognitive and emotional states as a driver of impulse buying behavior.

The S-O-R (Stimulus-Organism-Response) framework proposed by Mehrabian and Russell [10] is derived from environmental psychology and illustrates the impact of external environmental stimuli on the consumers’ internal perceptions and effects on the final behavior of individuals. It has been the most popular theoretic lens for studying online impulse buying behavior [7, 11, 12]. Parboteeah et al. [7] used the S-O-R framework to investigate online impulse buying, and separated website features into task factors (Task-Relevant Cues, TR Cues) that aid in the attainment of the online consumer's shopping goals, and emotional factors (Mood Relevant Cues, MR Cues) that do not directly support a particular shopping goal. However, Parboteeah et al. [7] took just navigability as a TR cue and visual appeal as an MR cue in their study. Of course, various web characteristics can be suggested as TR and MR cues, and they may vary in how they are presented to and perceived by online users [7]. Hence, various stimulus factors (including TR and MR cues) for the current information age are necessary, as described in detail in the next section.

In addition to external stimulus factors, Hsu et al. [13] also mentioned that personal traits (impulse buying tendency) cause differences in impulse buying behaviors among consumers. Therefore, when investigating impulse buying behaviors, the role of personality traits cannot be ignored. Xiang et al. [11], Huang [14] Bellini et al. [15], Chung et al. [16], Lim et al. [17], and Atulkar and Kesari [18] pointed out that the personal tendency towards impulse buying will result in increased impulse buying behavior. This study also includes the impulse buying tendency within a research framework.
This study contributes towards a better understanding of the antecedents of consumers’ online impulse buying behavior, which could increase benefit to online apparel website retailers. First, this study proposed a framework based on the S-O-R model [3, 5, 10, 11, 19] to find the antecedents of consumer reaction and behavior, especially to distinguish the TR cues (price attribution and convenience) and MR cues (visual appeal, social influence, and vendor creativity) to investigate consumer’s impulse buying for online apparel websites. Second, user impulsive buying tendency is also examined, as it is an important factor affecting consumers’ urge to buy impulsively and the profit of enterprises; thus, customer impulsive buying tendency will be considered in this study. Finally, previous studies [20, 21, 22] indicated that gender and age are two important control variables regarding the urge to buy impulsively, which are included in this study. These three research contributions are superior to Parboteeah et al. [7] research.

The rest of this study is structured, as follows. First, we provide a complete theoretical background, followed by the development of the statistical hypotheses and a research framework. We then describe the empirical study conducted to test our statistical hypothesis. Next, and then we discuss the analytical results and their academic and implications. Finally, the research limitations and future research suggestions are presented.

2. LITERATURE REVIEW

2.1 Impulse Buying

Impulse buying is described as a sudden, compelling, and hedonic purchasing behavior that lack deliberate consideration of all available information and alternatives [7]. Sometimes it shows an irresistible and continuous manner so that even the consumers without a specific plan for shopping or purchasing specific products, they are suddenly eager to buy something immediately as they enter the shopping environment, which means impulse buying is a complex and hedonistic behavior [23]. Due to the complexity and universality of impulsive buying in different product categories or shopping environments, this behavior has become an important issue in consumer behavior research [7, 24]. Because online shopping channels allow consumers to enjoy more advantages, they became an additional option for impulsive shoppers [25]. Previous research also shows that impulse buying is common in online shopping environments [26]. Most research in the past has focused on how website interfaces affect online impulse buying behavior [7, 27, 28]. Any external factor related to shopping will lead to urge to buy impulsively, not just website interfaces. For example, factors like price attributes, visual appeal, social influence, and vendor creativity result in impulsive buying decisions [5, 11].

2.2 S-O-R Framework

The S-O-R (Stimulus-Organism-Response) framework assumes that environmental stimuli affect an individual’s cognitive and affective reactions, which in turn lead to response behaviors [10]. The S-O-R framework aims to explain an individual’s perceptions and behavior as a response to external stimuli. Stimuli include factors outside an individual’s control, which affect the internal states of organisms when exposed to external stimuli. Organism acts as a bridge for connecting stimulus and behavior, and an organism regulates the final behavior in response to the
stimulus [29]. Response acts as a summary factor in response to results for an organism's regulation. The S-O-R approach was modified for different types of research based on different subjects [7, 30]. Today’s online impulse buying research explores the relationship between environmental factors, consumer perception, emotional response, and behavioral outcomes [31]. The S-O-R approach not only provides a traditional basis for customer behavior research but also helps to identify specific environmental characteristics and overall use or shopping experience. Various researches proved that environmental features of an online store could help predict consumers' impulse buying behavior [32]. In the following section, components of the S-O-R framework are explained in detail.

2.2.1. Stimulus

The first element of the S-O-R framework is the stimulus. Stimulus refers to individuals’ perceptions and then influence their response [7]. Previous environmental psychology research classified the features of websites into task-relevant stimuli (TR cues) and mood-relevant stimuli (MR cues) and regarded them as stimuli of consumers’ reactions [9]. TR cues include website design, arrangement, and content to assist consumers in completing purchase goals [9]. By contrast, MR cues help to make the shopping experience more pleasurable [9, 33]. Parboteeah et al. [7] claimed that various web characteristics can be suggested as TR and MR cues; various stimulus factors (including TR and MR cues) as described in detail as follows:

In TR cues, price attribute is one of the main reasons for participating in online shopping [34], and can be used to predict consumers' impulsive purchase behavior [25]. A survey by Chinese Marketing Information Service Inc. (CMISI) [35] shows that the main reason for shoppers buying clothes online is "delivery convenience" (59.7%), followed by "purchase convenience" (57.4%). Moreover, Liao et al. (2012) confirmed that convenience is one of the reasons for consumers to join online group buying. Childers et al. [36] suggested that convenience is proportional to both usefulness and joyfulness. Karbasivar and Yarahmadi [37] also confirmed that rapid payment through credit cards could increase the convenience and probability of impulse buying in online group buying. Thus, we also included convenience in this research model.

In MR Cues, Parboteeah et al. [7] and Xiang et al. [11] have shown that users of e-commerce sites pay more attention to visual appeal and focus more on the information available on the website. More information provided by an online store brings more enjoyment to the user, increasing the visual appeal of a website, thus resulting in consumers’ impulse buying behavior. Silvera et al. [38] also mentioned that social influence would increase impulse buying. Shu [39] and Shiau and Lou [40] also confirmed that social influence and purchase intention show strong associations in the online group buying environment. Besides, Dawson and Kim [25] showed that the creative use of commodities can effectively stimulate consumer impulse buying behavior. Similarly, Shiau and Luo [40] also showed that sellers’ ingenuity in products or services may affect consumers’ purchase intentions. In the presence of domestic online apparel brands, the innovation of apparel products has the effect of attracting customer attention and thus increasing the value of the product. This in turn stimulates impulsive buying behavior. Based on the previous studies, this study will include visual appeal, social influence, and vendor creativity.
2.2.2 Organism

The organism is an internal state of an individual which is represented by cognitive and affective states. Internal individual psychological status can be divided into cognitive reactions and affective reactions [31]. The cognitive reaction is the mental process when the consumer interacts with the stimulus, which refers to evaluation [9]. We know that TR cues focus on the execution of purchase tasks, and different types of TR cues decide website usefulness [7]; the most critical factor for evaluating cognitive reactions is perceived usefulness [36]. By contrast, affective reactions are related to an individual’s emotional response when he/she is stimulated by the environment. In the model of Parboteeah et al. [7], perceived enjoyment was investigated for capturing affective reactions to the environment. Both cognitive and affective reactions will also be affected by TR cues and MR cues, and both cognitive and affective reactions will affect final impulse buying behavior [7]. Moreover, impulse buying tendency (impulsiveness) is another significant determinant of impulse buying. Liu et al. [5], Chen and Yao [19], and Chopdar and Balakrishnan [22] refer to impulsiveness as a psychological organism that directly seeks a response. Impulsiveness denotes "a consumer tendency to buy spontaneously, non-reflectively, immediately, and kinetically" [8]. Chen and Yao [19] indicate that the shoppers with impulse buying tendency are more likely to have impulse buying behaviors than others. Therefore, this study uses perceived usefulness (cognitive reaction), perceived enjoyment (affective reaction), and impulse buying tendency as organism variables to investigate the final impulse buying behavior.

2.2.3 Response

The third element of the S-O-R approach is the response. Response refers to the outcome of consumers’ reactions toward the online impulse-buying stimuli and their internal evaluations [31]. In the context of impulse buying, the response has two aspects, namely, the urge to buy impulsively and the actual impulse buying behavior [11]. Previous studies adopted urge to buy impulsively rather than actual impulse purchase to do the research [7, 11, 41]; therefore, this study also adopts urge to buy impulsively to measure individuals’ impulsivity rather than using impulse buying behavior. Based on Chen and Yao’s [19] study, consumers’ urge to buy impulsively is defined as “after receiving external stimuli in shopping scenarios, consumers exhibit a strong emotional response which prompts them to unscrupulously, irrationally, willingly, and instantly purchase products they did not plan to purchase.” In this study, the focus response in the proposed model is the urge to buy impulsively of users on apparel websites.

3. PROPOSED MODEL AND DEVELOPMENT OF HYPOTHESES

As mentioned above, based on the S-O-R approach, price attribute, convenience, visual appeal, social influence, and vendor creativity will affect urge to buy impulsively through perceived enjoyment and perceived usefulness. Also, impulse buying tendency is integrated into the research model used in this study. All hypotheses from our model were developed and presented as follows:
3.1 Relationship between Price Attribute and Perceived Usefulness, Perceived Enjoyment

Lepkowska-White [42] mentioned that product discounts or promotions can attract consumers. To et al. [43] pointed out that price attribute will positively influence the utilitarian motivation of Internet shopping. Yu et al. [44] showed that consumers’ perceptions of the price attribute of media tablets will positively affect customer’s perceived usefulness. Zhu et al. [45] pointed out that the perceived price advantage positively influences the perceived usefulness of cross-buying. Walsh et al. [46] showed that price perceptions have a positive impact on the customer’s pleasure emotions. Moreover, Park et al. [47] indicated that a price attribute on a shopping website positively influences utilitarian and hedonic web browsing for apparel products. Therefore, this study postulates the following hypotheses:

H1a: Price attribute affects perceived usefulness positively.

H1b: Price attribute affects perceived enjoyment positively.

3.2 Relationship between Convenience and Perceived Usefulness, Perceived Enjoyment

Convenience means that consumers spend less time and effort in online shopping [48, 49] mentioned that convenience is proportional to usefulness and enjoyment. Zhang et al. [50] suggested that the perceived convenience of healthcare wearable technology has a positive effect on perceived usefulness. Zhu et al. [45] pointed out that one-stop shopping convenience positively influences the perceived usefulness of cross-buying. Moreover, Kim et al. [51] also pointed out that convenience of using tour information services will increase consumer’s perceived enjoyment. Therefore, this study hypothesized that:

H2a: Perceived convenience affects perceived usefulness positively.

H2b: Perceived convenience affects perceived enjoyment positively.

3.3 Relationship between Visual Appeal and Perceived Usefulness, Perceived Enjoyment

Visual appeal is a key factor in determining the degree of consumer interest in the display media richness and product information presented by shopping websites [52]. It also helps consumers evaluate whether the online store atmosphere meets their inner emotional state based on visual cues, and eventually make consumption decisions [53]. Yang et al. [54] pointed out that the visual attractiveness of wearable devices will positively affect customers’ perceived enjoyment. Previous research stated visual appeal of a website can have a strong effect on the evaluation and enjoyment of them [5, 55] and usefulness [56]. Parboteeah et al. [7], Xiang et al. [11], and Zheng et al. [53] pointed out that when shoppers browse online stores; the online store's visual appeal affects consumers’ perceived usefulness and arouses excitement. Thus, we propose the following hypotheses:

H3a: Visual appeal positively affects perceived usefulness.

H3b: Visual appeal positively affects perceived enjoyment.
3.4 Relationship between Social Influence and Perceived Usefulness, Perceived Enjoyment

Social influence is described as a person’s perception of the social pressure put on him/her to perform or not to perform a behavior [57]. Koenig-Lewis et al. [58], Bailey et al. [59], and Zhang et al. [60] suggested that social influence can help consumers to obtain new information regarding product usefulness. Terzis et al. [61] also mentioned that individual characteristics increase perceived usefulness via social influence, leading to affect behavioral intention indirectly. Li [62] found that social influence will increase the emotional part of using a social network. Shu [39] suggested that social influence in the form of recommendations from friends, family, and colleagues will increase intention for online group buying. Park et al. [63] indicated that social influence has a positive effect on the enjoyment benefit of the user using a mobile payment service. Therefore, the following hypothesis is formulated:

H4a: Social influence affects perceived usefulness positively.
H4b: Social influence affects perceived enjoyment positively.

3.5 Relationship between Vendor Creativity and Perceived Usefulness, Perceived Enjoyment

Vendor creativity means the creation of new ideas or new products to fit consumer’s requirements [40]. Hampton-Sosa [64] indicated that perceived creativity facilitation is positively related to perceived usefulness and enjoyment in the music streaming system context. Moreover, Arviansyah et al. [65] mentioned that creative vlogs will result in positive responses (perceived usefulness and enjoyment) and can leave an impression on the viewers. Therefore, it is hypothesized that:

H5a: Vendor creativity affects perceived usefulness positively.
H5b: Vendor creativity affects perceived enjoyment positively.

3.6 Relationship between Impulse Buying Tendency and Urge to Buy Impulsively

Consumers with this impulse buying tendency are more likely than others to want to own a specific product immediately without careful assessment of consequences [19, 66]. In other words, consumers with high impulse buying tendencies belong to the irrational person group who lack cognitive control [5, 66], so they are more likely to have impulse buying than other consumers who do not have this tendency [11, 14, 15, 16, 17, 18, 23, 67, 68]. Therefore, it is hypothesized that:

H6: Impulse buying tendency positively affects consumers’ urge to buy impulsively.

3.7 Relationship between Perceived Usefulness and Urge to Buy Impulsively

Perceived usefulness is defined as the degree to which the online shopper believes that their shopping efficiency will be enhanced by utilizing a specific website [7]. According to Chea and Luo [69], Akram et al. [2], and Zheng et al. [53], perceived usefulness of product information available on a website is considered an
important precursor towards consumers’ online buying behavior. Wu et al [70] and Chen et al [71] pointed out that the occurrence of impulse buying in consumers with perceived usefulness is relatively high. Thus, this study hypothesized that:

H7: Perceived usefulness has a positive impact on urge to buy impulsively.

### 3.8 Relationship between Perceived Usefulness and Perceived Enjoyment

Development of cognition will be induced based on individual understanding of stimulation, resulting in response for affective reactions [32]. In the context of social commerce platforms (SCP), Xiang et al [11] mentioned that the more useful a social commerce platform is perceived to be, the more enjoyable it is to use. Zhou and Feng [72] mentioned that perceived usefulness would have a positive influence on the perceived enjoyment of video calling usage. Besides, Demirci et al [73], Parboteeah et al [7, 74], Terzis et al [61], and Zheng et al [53] also mentioned that positive cognitive reactions are capable of increasing the emotional part of impulse buying. As a result, this study hypothesized that:

H8: Perceived usefulness affects perceived enjoyment positively.

### 3.9 Relationship between Perceived Enjoyment and Urge to Buy Impulsively

Verhagen and van Dolen [26] showed that positive affect was the main driver of online impulse buying behavior. Park et al [47] and Ku and Chen [55] indicated that hedonic browsing focuses on the entertaining, fun, and delightful aspects of shopping behavior, and positively influence consumers’ impulse buying behavior. In the social commerce platform context, Xiang et al [11] showed that users’ perceived enjoyment of a social commerce platform positively affects their urge to buy impulsively. Moreover, Parboteeah et al [7, 74], Shen and Khalifa [30], Chen et al [71], and Zheng et al [53] pointed out that when consumers browse online stores; the perceived enjoyment of customers affects consumers’ urge to buy impulsively. Therefore, we propose the following hypothesis:

H9: Perceived enjoyment affects urge to buy impulsively positively.

### 3.10 Control variables

To examine the effectiveness of the research model, we included control variables that might affect impulse buying. Some studies have shown that female customers experience more impulse buying [71, 75, 76]. Coley and Burgess [20] indicate that female impulsive buyers tend to buy products such as jewelry and clothes that express their emotional stylistic appearance feelings while men bought items related to technology (electronics, hardware, and computer software) and sports memorabilia. Age also influences impulsive buying, with younger consumers being more likely to buy impulsively than older consumers [21, 22, 77, 78].

In conclusion, we propose the research model, as shown in Figure 1.
4. DATA COLLECTION AND ANALYSIS

4.1. Measures

Since the objective of this study was to explore the factors that influence customers’ urge to buy impulsively, we modified and adjusted the questions to fit the online apparel websites context. All the items used in our questionnaire scale were measured using a seven-point Likert-type scale (“strongly disagree” 1 to “strongly agree” 7). A pretest and a pilot test were performed to validate the questionnaire measurements. The pretest involved six participants (two professors in the e-commerce field and four online apparel consumers) who were familiar with online shopping behavior. They were asked to provide comments by eliminating redundant or unrelated measurement items. In the pilot test, we invited 45 respondents from the population of online apparel websites to confirm their reliability and validity. Some minor modifications to the content of the items were solicited before the formal survey was conducted. The appendix lists all of the questionnaire items. The study analyzed the collected data with the partial least squares (PLS). The psychometric properties of the constructs (i.e., validity and reliability) together with relationships between the constructs in the research model were examined simultaneously [79]. Compared with the covariance-based structural equation model, PLS is variance-based and suitable for predictive applications and theory building. There are two steps to test the goodness of model fit: First, the measurement model was tested using a confirmatory factor analysis (CFA) to assess the discriminant and convergent validity. Next, a structural model analysis was performed to test the significance of the path coefficients and validate the hypothesis of the research hypothesis.
4.2 Data Collection

Data collection was accomplished via an online questionnaire. We set up a questionnaire using Google Forms and distributed it on social media platforms. The questionnaire was distributed from April 5th to May 15th, 2020. A total of 512 responses were received, we obtained 446 usable responses. We had to drop 66 participants during the data selection process because some of them did not engage in any shopping activity. The sample demographics are shown in Table 1.

Among these effective samples, 63.7% of the respondents were female, 36.3% were male, and at least 43.9% were students. A total of 77.5% of the respondents were between the ages of 19 and 35, and 60.3% had earned a bachelor’s degree. A total of 35.2% of the respondents spent at least one session per week visiting online apparel websites, whereas 28.7% spent at least once per month visiting online apparel websites. The ranks for spending time in visiting online apparel websites are “30 minutes ~ 1 hour” and “less than 30 minutes”, accounting for 49.1% and 31.4%, respectively. The ranks for spending money on online apparel websites are “NT$ 501~800” and “NT$ 801~1200”, accounting for 33.2% and 32.1%, respectively. Seven apparel shopping websites frequently visited by participants included: apparel official websites (e.g. Lative, Tokichoi, UNIQLO, OB design, etc., 50.0%), Shopee auction (23.2%), Yahoo! Shopping mall (9.6%), PChome Shopping mall (5.8%), Taobao Shopping mall (7.2%), and others (4.1%). In order to validate the representativeness of our collected sample, a comparison of the socio-demographic characteristics of our respondents with those reported in a survey of ecommerce use in Taiwan, as conducted by the Market Intelligence and Consulting Institute (MIC) [80]. MIC is one of the leading organizations in providing an abundance of professional information on Internet demographics and trends. The comparison revealed a close match between the two sample pools.

Table 1. Demographics

| Measure                  | Items                        | Frequency | Percentage (%) |
|-------------------------|------------------------------|-----------|----------------|
| Gender                  | Male                         | 162       | 36.3           |
|                         | Female                       | 284       | 63.7           |
| Age                     | Under 18                     | 15        | 3.4            |
|                         | 19-24                        | 192       | 43.0           |
|                         | 25-35                        | 154       | 34.5           |
|                         | 36-45                        | 51        | 11.4           |
|                         | Over 45                      | 34        | 7.6            |
| Education               | Junior high school or less   | 13        | 2.9            |
|                         | High school                  | 19        | 4.3            |
|                         | University                   | 269       | 60.3           |
|                         | Graduate school              | 132       | 29.6           |
|                         | Ph. D.                       | 13        | 2.9            |
| Occupation              | Full-time student            | 196       | 43.9           |
|                         | Military, public service, and education | 55 | 12.3 |
|                         | Finance                      | 11        | 2.5            |
|                         | Communication worker         | 6         | 1.3            |
|                         | Freelancer                   | 26        | 5.8            |
|                         | Service industry             | 66        | 14.8           |
|                         | Manufacturing                | 27        | 6.1            |
Table 1. Demographics (cont.)

| Measure                                                                 | Items                                      | Frequency | Percentage (%) |
|-------------------------------------------------------------------------|--------------------------------------------|-----------|----------------|
| Specialist                                                              | 8                                          | 1.8       |                |
| Information industry                                                    | 32                                         | 7.2       |                |
| housewife                                                               | 13                                         | 2.9       |                |
| Agricultural/forestry/fishing/herding                                   | 2                                          | 0.4       |                |
| Other(retirement and unemployment)                                       | 4                                          | 0.9       |                |
| Frequency of visiting apparel websites                                  | at least once each day                      | 52        | 11.7           |
|                                                                          | at least once per week                      | 157       | 35.2           |
|                                                                          | at least once per month                     | 128       | 28.7           |
|                                                                          | at least once per three months              | 58        | 13.0           |
|                                                                          | at least once per half-year                 | 31        | 7.0            |
|                                                                          | at least once per year                      | 20        | 4.5            |
| Time for visiting apparel websites                                      | < 30 minutes                                | 140       | 31.4           |
|                                                                          | 30–60 minutes                               | 219       | 49.1           |
|                                                                          | 1~3 hours                                   | 70        | 15.7           |
|                                                                          | 3~6 hours                                   | 17        | 3.8            |
|                                                                          | More than 6 hours                           | 0         | 0.0            |

4.3 Common Method Bias

Common method bias (CMB) was deemed a potential concern in this study, because independent and dependent data from the same source are collected [81]. This study conducted two tests to examine the common method bias. First, Harman’s single-factor test is used [81]; un-rotated exploratory factor analysis indicated that the largest factor explained 38.55% of the overall variance (< 50%). The total variance explained was 74.46% in un-rotated factor analysis; therefore, common method bias in this study is not a significant problem. Second, another common method factor that was linked to all single-indicator constructs was included in the Smart PLS model; this was recommended by Liang et al. [82]. The results demonstrated that the loadings of the principal variables were all significant (p < 0.001), and none of the common method factor loadings was significant. These results further indicated that common method bias was unlikely to be a serious concern in this study.

5. ANALYSIS AND RESULTS

5.1 Assessment of The Measurement Model

The first step in the analysis was to evaluate the measurement model based on four criteria: First, reliability was evaluated in terms of internal consistency of items. Here, Cronbach’s α and composite reliability were used. In Table 2, the Cronbach’s of all constructs were above 0.7, and exceeded the threshold values suggested by Fornell and Larcker [83] and Hair et al. [84]; furthermore, the composite reliability ranged from 0.891 to 0.953, exceeding the threshold value of 0.7 [84], indicating that the research model measures possess sufficient construct reliability.
In addition, Table 2 shows that the standardized factor loadings for different measurement items were above 0.70 and the average variance extracted (AVE) for all constructs were above 0.50 (range from 0.671 to 0.808); these suggest that the proposed model possess sufficient convergent validity [85]. To address discriminant validity, we first compare average variance extracted (AVE) and Shared Variance between variables as suggested by Fornell and Larcker [83]. The square root of the average variable explained of any given construct was greater than the corresponding inter-measure correlation. Table 3 represents the related results where all of the square root of the AVE (highlighted in bold) are greater than the correlations between a variable that confirms the discriminant validity of the constructs.

**Table 2. Reliability and Validity**

| Constructs                  | Factor Loading | Cronbach’s Alpha | Average Variance Extracted (AVE) | Composition Reliability |
|-----------------------------|----------------|------------------|----------------------------------|-------------------------|
| Convenience                 | 0.792–0.846    | 0.884            | 0.684                            | 0.915                   |
| Impulse Buying Tendency     | 0.806–0.875    | 0.897            | 0.708                            | 0.924                   |
| Price Attribute             | 0.873–0.926    | 0.882            | 0.808                            | 0.927                   |
| Perceived Enjoyment         | 0.876–0.917    | 0.939            | 0.803                            | 0.953                   |
| Perceived Usefulness        | 0.841–0.878    | 0.913            | 0.741                            | 0.935                   |
| Social Influence            | 0.730–0.915    | 0.814            | 0.734                            | 0.891                   |
| Urge to Buy Impulsively     | 0.781–0.924    | 0.917            | 0.753                            | 0.938                   |
| Visual Appeal               | 0.751–0.877    | 0.877            | 0.671                            | 0.911                   |
| Vendor Creativity           | 0.787–0.898    | 0.879            | 0.734                            | 0.917                   |

**Table 3. Discriminant Validity**

|                      | CV   | IBT  | PA   | PE   | PU   | SI   | UBI  | VA   | VC   |
|----------------------|------|------|------|------|------|------|------|------|------|
| Convenience          | 0.827|      |      |      |      |      |      |      |      |
| Impulse Buying Tendency | 0.225| 0.841|      |      |      |      |      |      |      |
| Price Attribute      | 0.540| 0.261| 0.899|      |      |      |      |      |      |
| Perceived Enjoyment  | 0.499| 0.576| 0.444| 0.896|      |      |      |      |      |
| Perceived Usefulness | 0.637| 0.352| 0.439| 0.651| 0.861|      |      |      |      |
| Social Influence     | 0.176| 0.571| 0.280| 0.488| 0.356| 0.857|      |      |      |
| Urge to Buy Impulsively | 0.204| 0.687| 0.291| 0.539| 0.343| 0.497| 0.868|      |      |
| Visual Appeal        | 0.612| 0.367| 0.540| 0.599| 0.543| 0.332| 0.37 | 0.819|      |
| Vendor Creativity    | 0.471| 0.372| 0.455| 0.534| 0.534| 0.445| 0.33 | 0.601| 0.857|

Note: *Diagonal elements (in bold) are the square root values of the average variance extracted (AVE). Off-diagonal elements are the correlations among constructs; CV = Convenience; IBT = Impulse Buying Tendency; PA = Price Attribute; PE = Perceived Enjoyment; PU = Perceived Usefulness; SI = Social Influence; UBI = Urge to Buy Impulsively; VA = Visual Appeal; VC = Vendor Creativity.
5.2 Analysis of Structural Model

Following the validation and reliability verification, we applied bootstrapping analysis with 5000 re-samples to the whole sample to examine the structural validity of the model (hypotheses testing). As our study is based on a strong theoretical foundation of the S-O-R framework, high factor loadings, and involves a fairly high sample size (n = 446), Smart PLS is an appropriate statistical analysis tool [53, 86]. The results of the structural path analysis are presented in Table 4 and Figure 2. The structural model suggests that convenience (β = 0.459, p < 0.001) strongly correlated with perceived usefulness. Other statistically significant correlating independent variables were vendor creativity (β = 0.187, p < 0.001), social influence (β = 0.158, p < 0.001), and visual appeal (β = 0.089, p < 0.01). In comparison to this, price attribute (β = 0.014, p = 0.856) did not correlate with perceived usefulness. Similarly, visual appeal (β = 0.235, p < 0.001) strongly correlated with perceived enjoyment. Other statistically significant correlating independent variables were social influence (β = 0.047, p < 0.01). In comparison to this, convenience (β = 0.016, p = 0.866) did not correlate with perceived enjoyment. The study findings support hypotheses H1b, H2a, H4a, H4b, H5a, and H5b, but not H1a, and H2b (see Table 4 and Figure 2). Besides, impulse buying tendency (β = 0.728, p < 0.001) was positively related to a consumer’s urge to buy impulsively, thus supporting H6. Furthermore, perceived usefulness directly and positively influences consumers’ perceived enjoyment (β = 0.372, p < 0.001) (H8 is supported), whereas perceived usefulness indirectly influences consumers’ urge to buy impulsively through perceived enjoyment (β = 0.007; p = 0.895) (H7 is not supported). Perceived enjoyment directly and positively influences consumers’ urge to buy impulsively (β = 0.110, p < 0.001) (H9 is supported). Also, the control variable, age, had a significant positive effect on consumers’ urge to buy impulsively, while gender didn’t have an effect on consumers’ urge to buy impulsively.

The R² value refers to the value of the exogenous variables that explain the variation in the endogenous variables, which is used as an indicator of the overall predictive power of the model. Chen et al. [21] recommended that the value of R² for exogenous variables should be more than 0.20 to be statistically viable. As shown in Figure 2, the explained variance is 50.3% for perceived usefulness, 56.4% for perceived enjoyment, and 65.3% for urge to buy impulsively. All of the R² values exceed the minimum criteria of 0.20, except for return intention [21].

| Hypothesis | Path Coefficient | t-value | Decision |
|------------|------------------|---------|----------|
| H1a : Price Attribute → Perceived Usefulness | 0.014 | 1.063 | Non-supported |
| H1b : Price Attribute → Perceived Enjoyment | 0.047 | 2.790(*** | Supported |
| H2a : Convenience → Perceived Usefulness | 0.459 | 26.480(*** | Supported |
| H2b : Convenience → Perceived Enjoyment | 0.016 | 1.1087 | Non-supported |
| H3a : Visual Appeal → Perceived Usefulness | 0.089 | 4.030(*** | Supported |
| H3b : Visual Appeal → Perceived Enjoyment | 0.235 | 11.433(*** | Supported |
| H4a : Social Influence → Perceived Usefulness | 0.158 | 10.732(*** | Supported |
| H4b : Social Influence → Perceived Enjoyment | 0.233 | 13.435(*** | Supported |
| H5a : Vendor Creativity → Perceived Usefulness | 0.187 | 8.300(*** | Supported |
| H5b : Vendor Creativity → Perceived | 0.050 | 2.233(**) | Supported |
### Table 4. Tests of Hypothesized Relationships (cont.)

| Hypothesis                                      | Path Coefficient | t-value    | Decision |
|-------------------------------------------------|------------------|------------|----------|
| H6 : Impulse Buying Tendency → Urge to Buy Impulsively | 0.728            | 55.083(***)| Supported |
| H7 : Perceived Usefulness → Urge to Buy Impulsively | 0.016            | 1.255      | Non-supported |
| H8 : Perceived Usefulness → Perceived Enjoyment  | 0.372            | 16.567(***)| Supported |
| H9 : Perceived Enjoyment → Urge to Buy Impulsively | 0.110            | 5.254(***)| Supported |

Notes: *** P < 0.001, ** P < 0.01, * P < 0.05.

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**Figure 2.** The results for the hypothesis test.

(*** P < 0.001, ** P < 0.01, * P < 0.05)

**6. CONCLUSION AND DISCUSSION**

**6.1. Research Findings**

This study aimed to explore consumers’ impulse buying for online apparel websites based on the S-O-R framework modified from Parboteeah et al. [7]. Our research findings are described as follows:

1. For TR cues, our findings show that price attribute has no significant effect on perceived usefulness, but price attribute has a positive impact on perceived enjoyment; we found that when consumers browse the apparel website, the
preferential prices and promotional activities provided by online apparel websites can make consumers feel more valued when browsing apparel products. Besides, convenience positively and significantly affects perceived usefulness; while convenience shows no effect on consumer perceived enjoyment. This means that online apparel websites should provide a convenient purchasing process, without any spatial or time limitations; the more convenient the online apparel website is, the higher the value of the consumer’s perceived usefulness, leading to increased intention to consumer’s urge to buy impulsively.

2. For MR cues, our findings show that visual appeal has a positive impact on perceived usefulness and perceived enjoyment. This finding was analogous to the view proposed by Zheng et al. [53] and Parboteeah et al. [7]. Unlike previous studies, this study considered two factors (perceived usefulness and perceived enjoyment) at the same time, because the web pages and layout of the apparel websites can not only help consumers feel entertained, but also reduce the difficulty of consumers’ shopping efforts. Also, social influence had a significant impact on both perceived usefulness and perceived enjoyment; it means that apparel website websites can share some experiences with famous people or celebrities [87, 88] to increase consumer’s feeling or emotion (usefulness and enjoyment as the organism factors in this study). Third, vendor creativity positively affects perceived usefulness and perceived enjoyment, which means that the more consumers browse apparel websites, the more the new products and sales activities will stimulate consumers’ feelings.

3. Impulse buying tendency has a positive impact on the urge to buy impulsively. It indicate that when a consumer have impulsive trait and would like to have an apparel product immediately, the more impulse buying they will have, as it is more difficult for highly impulsive consumers to maintain self-control, so it is easy for them to generate their urge to buy impulsively. This result is consistent with several previous studies [5, 11, 17, 19, 41].

4. Our results show that perceived usefulness has a significant positive significant effect on perceived enjoyment. Apparel websites should emphasize the strength of their products and their promotional activities. Thus, consumers will believe that purchasing through apparel websites is a useful and correct decision, and then promote their joyful and pleasurable experiences because of their urge to buy impulsively. Most importantly, we found that perceived usefulness has no direct effect on the consumer’s urge to buy impulsively, but perceived enjoyment has a positive impact on the urge to buy impulsively. This result is consistent with Wu et al. [70] and Zheng et al. [53] studies.

5. Finally, the control variable, age, had a significant positive effect on consumers’ urge to buy impulsively; this result is consistent with Chen et al.’s [21] study. Age also influences impulsive buying, with younger consumers between the ages of 19 and 35 being more likely to buy impulsively.

6.2 Research contribution

6.2.1 Academic contribution

First, in this study, using the S–O–R approach as a theoretical framework, a model of impulse buying in the context of online apparel purchases was proposed and tested. Features that were deemed pertinent for apparel websites and include TR cues (price attribution and convenience), MR cues (visual appeal, social influence, and vendor creativity) were used as stimulus. The results of this study confirm that these
features are important in the context of online apparel product purchases, given that the reliability coefficients which were above 0.80. These results provide support for the initial work by Parboteeah et al. [7, 74]. Further, these results provide evidence that the impulsive sales of apparel products can be increased through the manipulation of these features on the apparel’s websites [5, 47, 74].

Second, impulse buying tendency has the greatest influential effects on consumers’ urge to buy impulsively. We also found that the explained variance is 64.4% for urge to buy impulsively is higher than Parboteeah et al.’s [7] research with explaining 39.3% of the variance in the urge to buy impulsively construct. These results provide support for the impulse buying tendency that cannot be ignored. This is the second academic contribution to our study.

Third, according to the results, in comparison to perceived usefulness, perceived enjoyment had a strong and positive effect on consumers’ urge to buy impulsively, which was consistent with a previous study [53]. This study further revealed that perceived usefulness had an indirect influence on the urge to buy impulsively via affecting reaction (perceived enjoyment); perceived enjoyment played an important role in consumers’ behavior intention on online apparel websites.

6.2.2 Practical Contributions

This study offers practical implications for apparel website managers by offering insight into ways to improve their impact on consumers’ urge to buy impulsively and offering management strategies; apparel proprietors on the internet must increase both external stimulus (TR cues and MR cues) for impulse consumers, which will promote apparel websites to have more profit. Several managerial implications are further obtained from this research, as follows:

First, in an online apparel shopping context, convenience is a significant driving factor in consumers’ perceived usefulness, eventually discouraging perceived enjoyment of the apparel websites. In other words, consumers spend less time and effort in the online apparel websites are more likely to increase consumers’ perceived usefulness (i.e., gathering information, without going out for shopping); apparel websites should provide accurate purchase information to make consumers find products rapidly without restricting time, location or mobile devices. This finding implies that convenience can be a marketing stimulus for consumers’ perceived usefulness to engage in rational informational processing during online apparel products shopping context [47].

Second, visual appeal has a significant effect on the perceived enjoyment of apparel products; that is, the visual appeal of an apparel product has a direct effect on the perceived enjoyment of apparel. This finding supports the notion that visual appeal is a marketing stimulus to promote consumers’ enjoyment [7, 11]. Therefore, online apparel website managers can use product virtualization technology, e.g., 3D virtual reality technology [89], to provide the apparel product information on the website and convert first-time visitors or web browsers into impulse buyers while shopping online.

Third, social influence increases the consumer’s usefulness and enjoyment of online apparel products. Apparel website managers can utilize eWOM from celebrities on social media, friends, or family to help consumers to obtain new product information and increase online market share for apparel products. This may
increase a consumer’s perceived usefulness and enjoyment, as well as increase their sequential impulse buying behavior.

Fourth, according to the analytical results, perceived enjoyment had a strong and positive effect on consumers’ urge to buy impulsively than perceived usefulness. On the online apparel websites, consumers who browsed to have fun and disregard the outcomes inclined to have affective reactions would eventually have impulse buying behavior. Therefore, apparel websites can provide a variety of apparel products and promotion activities to promote consumers’ positive emotional responses (perceived enjoyment).

Finally, people with impulsive traits are more likely to spend more money on apparel products without carefully considering the consequences of impulsive buying [17, 66]. Therefore, the online apparel website managers could offer additional shopping functions and reduce barriers to impulse buying; this can encourage impulsive consumers to spend more money and time on apparel products. For example, the apparel product recommendation system should be incorporated with the online shopping websites to assist consumers in finding suitable clothing that facilitates their impulsive buying behavior [86].

6.3 Research Limitations and Future Suggestions

Based on the research results, several new possibilities are revealed for future exploration:

First, we can explore the usage of apparel website services based on different locations or countries in future suggestions. Next, some significant variables can be integrated into this model to increase the explanation of this model to urge to buy impulsively, such as positive and negative affect [15, 19, 23, 26], hedonic value and utilitarian value [47, 17, 53], para-social interaction [11, 15, 19, 23, 26, 87, 88], pleasure and arousal [19, 90, 91]; flow experience [70, 87], consumers’ attitudes toward the brand [88], and website quality and other related quality variables (e.g. trust, satisfaction, and commitment) [70, 92].

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### Appendix. Measurement scales

| Construct                  | Measure                                                                 | Adapted source |
|----------------------------|-------------------------------------------------------------------------|----------------|
| Convenience                | CV1 This apparel website provides ease procedures for ordering          |                |
|                            | CV2 A first-time buyer can purchase from this apparel website without much help. |                |
|                            | CV3 The apparel website is very convenient to use.                      | [48][50]       |
|                            | CV4 The apparel website allows me to make a purchase whenever I want.   |                |
|                            | CV5 The apparel website allows me to make shopping without going out.   |                |
| Impulse Buying Tendency    | IBT1 I often buy things spontaneously.                                  |                |
|                            | IBT2 If I see something new on the apparel website, I want to buy it.   |                |
|                            | IBT3 Sometimes I cannot resist the temptation to buy something.         | [5][11][19]    |
|                            | IBT4 I often want to buy things when I see something nice.               |                |
|                            | IBT5 “Buy now, think about it later” describes me.                      |                |
| Price Attribute            | PA1 The apparel website carries products with reasonable prices.         | [43][45][47]  |
|                            | PA2 Discounted prices are very cheap on the apparel website.            |                |
|                            | PA3 The price of products on the apparel website is economical.         |                |
| Perceived Enjoyment        | PE1 Shopping with apparel website was exciting.                         |                |
|                            | PE2 Shopping with apparel website is enjoyable.                         | [7][11][74]   |
|                            | PE3 Shopping with apparel website is interesting.                       |                |
|                            | PE4 I found my visit to apparel website is fun.                         |                |
| Construct              | Measure                                                                                                                                                                                                  | Adapted source |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| PE5                   | Shopping with apparel website is fun for its own sake.                                                                                                                                                   |                |
| Perceived Usefulness  | PU1 Using apparel websites can save shopping time in searching and buying products.                                                                                                                       |                |
|                       | PU2 Apparel websites are helpful in buying what I want online.                                                                                                                                            |                |
|                       | PU3 Using the apparel website can increase my shopping productivity in searching and buying products.                                                                                                | [7][11][60][74]|
|                       | PU4 Using the apparel website can enable me to have a better search and purchase of products than using other websites.                                                                                 |                |
|                       | PU5 Using the apparel website can increase my shopping effectiveness.                                                                                                                                     |                |
| Social Influence      | SI1 Using the apparel website is common in my society.                                                                                                                                                    | [58][59][60][63]|
|                       | SI2 My family members and good friends have influenced my use of the apparel website.                                                                                                                     |                |
|                       | SI3 People think those who use the apparel website are cool.                                                                                                                                              |                |
|                       | SI4 Those who use the apparel website easily get the attention of other people.                                                                                                                        |                |
| Urge to Buy Impulsively| UBI1 Browsing apparel websites, I had a desire to buy items that did not pertain to my specific shopping goal.                                                                                             | [5][11][19]   |
|                       | UBI2 I experienced several sudden urges to buy things when doing shopping on apparel websites.                                                                                                           |                |
|                       | UBI3 While browsing apparel websites, I inclined to purchase items outside my specific shopping goal.                                                                                                    |                |
|                       | UBI4 When I do the shopping on apparel websites, I felt a sudden urge to buy something                                                                                                                   |                |
|                       | UBI5 I ended up spending more money than I originally set out to spend.                                                                                                                                    |                |
| Visual Appeal         | VA1 The layout of the mobile web site is appropriate.                                                                                                                                                      | [11][52][53]  |
|                       | VA2 This website is visually pleasing.                                                                                                                                                                   |                |
|                       | VA3 The home page is attractive and makes me want to visit.                                                                                                                                                |                |
|                       | VA4 The apparel website shows me plenty of visually appealing pictures.                                                                                                                                    |                |
|                       | VA5 The apparel website is visually cheerful.                                                                                                                                                             |                |
| Vendor Creativity     | VC1 The apparel website vendor suggests new product ideas.                                                                                                                                               |                |
|                       | VC2 The apparel website vendor often has new ideas about how to promote products.                                                                                                                        | [40][64]      |
|                       | VC3 The apparel website vendor often has a new approach to sale products.                                                                                                                               |                |
|                       | VC4 The apparel website vendor develops new ways to meet consumer demands.                                                                                                                                   |                |

*SI1 was dropped due to low factor loading.