

## What is Impulse Buying? An analytical network processing framework for prioritizing factors affecting impulse buying

Sahel Ehsani Masouleh<sup>a</sup>, Marzieh Pazhang<sup>a</sup> and Javad Siahkali Moradi<sup>b\*</sup>

<sup>a</sup>M.A. in Marketing Research, Science & Research Branch, Islamic Azad University, Tehran, Iran

<sup>b</sup>M.A. in Operational Research, Science & Research Branch, Islamic Azad University, Tehran, Iran

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### ABSTRACT

One of the most important issues affecting profitability is to determine the impact of different factors influencing purchasing activities. In this paper, we perform an extensive literature survey to detect different purchasing factors influencing customers' behavior. The factors are categorized in three different groups and they are ranked using analytical network process. The results of our survey indicate that three factors of personal, product and situational play important roles in purchasing impulse. The personal item includes different factors where demographic characteristic factors receive the highest ranking (35%) followed by other factors are feelings, excitement and fun, self identify, education and novelty. There are also three sub-factors associated with demographic characteristics including gender, age and race and the weights are 0.46748, 0.42668 and 0.10584, respectively, which means gender is the most important factor followed by age and race. Finally, the other factor is associated with situational factors' group, which includes presence of others, culture, design of store, time available, local market condition, sales staff and self service with the relative importance of 0.04296, 0.08733, 0.12130, 0.22217, 0.05643, 0.15346 and 0.31635, respectively.

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## 1. Introduction

With a glance to different studies, we will easily understand the importance of impulse buying. According to Liao et al. (2009) impulse buying plays an important role on changing the purchasing figures in United states. Impulsive customers' buying behavior accounts for up to 80% of all buying items in certain product categories and it has been recommended that purchases of new products result more from impulse buying than from prior planning (Abrahams, 1997; Smith, 1996; Sfiligoj, 1996; Liao et al, 2009). There are other studies, which specify that an estimated \$4.2 billion annual store volume was created by impulse sales of items such as candy and magazines (Mogelonsky, 1998; Liao et al., 2009). Another study indicates that impulse purchases, making operational as unplanned purchases and they represent between 27 and 62 percent of all department store purchases (Bellenger

\* Corresponding author. Tel: +989122520885

E-mail addresses: [syahkaly@gmail.com](mailto:syahkaly@gmail.com) (J. Siahkali Moradi)

et al., 1978). These mentioned studies and others explain the relative importance and the impact of impulse buying on consumers' behavior. In this research, we decide to provide a comprehensive definition for impulse buying and determine important factors affecting consumers to change their planned behavior and show impulsiveness in their purchase behavior.

## **2. Impulse Buying**

Impulse buying is a sudden, compelling, hedonically complex purchase behavior in which the speed of the impulse purchase decision precludes any thoughtful, deliberate consideration of alternatives or future implications (Kollat & Willet, 1967; Cobb & Hoyer, 1986; Rook, 1987; Piron, 1991; Beatty & Ferrel, 1998; Bayley & Nancarrow, 1998; Kacen & Lee, 2002; Vohs & Faber, 2003; Parboteeah, 2005).

Impulse buying is a major research issue among consumer behavior researchers not only because of its complexities but also its wide-spread prevalence across a broad range of product categories (Applebaum, 1951; Baumeister, 2002; Beatty and Ferrell, 1998; Clover, 1950; Kacen and Lee, 2002; Ramanathan and Menon, 2006; Rook, 1987; Vohs and Faber, 2007; West, 1951).

Impulse buying is defined as an unplanned, which is characterized by both relatively rapid decision-making, and a subjective bias for immediate possession (Rook & Gardner, 1993). Impulse buying is associated with consumer impulsiveness (CI) trait, positively (Puri, 1996).

According to Ko (1993), impulse buying behavior is a sufficient unplanned attitude when it is associated with objective evaluation and emotional preferences in shopping. Impulse buying plays vital role in fulfilling hedonic desires associated with hedonic consumption (Hausman, 2000; Piron, 1991; Rook, 1987). Impulse buying is more emotional than rational, which is why it is normally used by states of intense feeling. An impulse arises immediately upon confrontation with a certain stimulus (Wolman, 1973). Consumer impulse buying is an important concept along with product involvement as they are involved with a specific product (Jones et al., 2003). According to Han et al. (1991), impulse buying was classified as four types:

- (1) Planned impulse buying;
- (2) Reminded impulse buying;
- (3) Fashion-oriented impulse buying; and
- (4) Pure impulse buying.

The purchase is unintended because it is made while shopping, although the individual was not actively looking for that item, had no pre-shopping plans to buy the item, and was not involved with a shopping task, such as searching for a gift. Unintended buying arises from an immediate intend to purchase a particular item while shopping. The decision and interest to buy happens after the person visits the item (Hoch & Loewenstein, 1991). Unintended and unplanned have long been associated with impulse buying and is an important item but not sufficient basis for categorizing a purchase as an impulse purchase (Kollat & Willet, 1967; Rook, 1987; Rook & Fisher, 1995).

Impulse buying is unreflective because the buy is made without engaging in a significant deal of evaluation. An individual buying on impulse is less likely to consider the consequences or to think carefully before making the purchase (Rook, 1987).

Kroeber-Riel (1980) explained that impulse buying is a reactive behavior, and often involves an sudden response to a stimulus (Rook, 1987). Beatty and Ferrell (1998) defined impulse buying as instantaneous purchase having no previous objective to buy the commodity. Stern (1962) found that products bought on impulse are usually cheap. According to a number of studies (Rook & Fisher, 1995; Beatty & Ferrell, 1998; Verplanken & Herabadi, 2001; Virvilaite et al., 2009) the main characteristics of impulsive purchasing behavior are: inclination to impulse buying, spontaneity in buying, satisfaction felt after unplanned purchase, and lack of shopping list. This refers to the individual characteristics of the consumer.

## *2.1 Impulse buying factors*

There are a lot of studies on various factors affecting impulse buying. Stern (1962) characterized nine factors affecting impulse buying as follows,

- 1- Low price,
- 2- Marginal need for item,
- 3- Mass distribution,
- 4- Self service,
- 5- Mass advertising,
- 6- Prominent store display,
- 7- Short product life,
- 8- Small size or light weight, and
- 9- Ease of storage.

In addition, there are other studies that investigate the role of various factors on impulse buying. For example the researches of Beatty and Ferrell (1998); Husman (2000); Rook and Gardner (1993); Youn and Faber (2000) found that emotions and feelings strongly influence buying behaviors, which result into consumer impulse buying. Babin and Babin (2001) found that in stores consumer's purchasing intentions and spending can largely be influenced by emotions. For better focusing on this area we divide impulse buying factors in three different groups:

### *2.1.1 Personal factors*

In this group, we collect all different factors which are associated with a person who is shopping. For instance, feelings and education are categorized in this group. Impulse buying behavior is motivated by a powerful urge (Verplanken & Herabadi, 2001) and feelings of pleasure and excitement (Hausman, 2000; Rook, 1987; Rook & Fisher, 1995; Ramanathan & Menon, 2002; Peck & Childers, 2006). Some other internal, personal-related factors thought to influence the act of impulse buying are: educational experience (Wood, 1998) and mood states (Rook & Gardner, 1993).

Stores are the place where buyers buy products whether it's planned or unplanned purchase. It only depends on the personal income, which indicates how much and how many times he or she visits shopping stores to buy products (Tirmizi et al, 2009). Previous researches have shown that different factors impact impulsive purchasing behavior, including the presence of others (Luo, 2005), the consumer's mood (e.g., Beatty and Ferrell, 1998; Rook and Gardner, 1993), trait impulsiveness (e.g., Jones et al., 2003; Rook and Fisher, 1995; Weun et al., 1998), product category impulsiveness (Jones et al., 2003), evaluation of the appropriateness of engaging in impulse buying (e.g., Rook and Fisher, 1995), individual and environmental touch (Peck and Childers, 2006), self-identity (e.g., Dittmar et al., 1995; Lee and Kacen, 1999), cultural orientation (e.g., Kacen and Lee, 2002; Lee and Kacen, 1999), as well as demographic characteristics such as gender (e.g., Dittmar et al., 1995; Rook and Gardner, 1993) and age (e.g., Helmers et al., 1995; Wood, 1998). An individual's impulsive behavior tendencies have also been associated with demographic characteristics such as a consumer's age. Based on a national sample of adults in the United States, Wood (1998) found a reverse relationship between age and impulse buying overall. However, the relationship is non-monotonic — between the ages of 18 and 39 impulse buying increases slightly and thereafter declines. This is consistent with Bellenger et al. (1978) who found that shoppers under 35 were more prone to impulse buying compared to those older than 35 years. Research on trait impulsiveness indicates that younger individuals score higher on measures of impulsivity compared to older people (Eysenck et al., 1985; Helmers et al., 1995; Rawlings et al., 1995) and demonstrate less self-control than adults (Logue & Chavarro, 1992). The theory of individualism and collectivism offers several insights into many of

the variables linked to impulsive buying behavior, including self-identity, normative influences, the suppression of emotion, and postponement of instant gratification. In the next section, we discuss this theory and demonstrate that it is well suited to the study of impulse buying.

### 2.1.2 Product related factors

All the factors, which influence some body's impulse buying and are associated with a product are categorized in this group. Examples of product related influences are product appearance and design (Verplanken & Herabadi, 2001). Other external or product-related factors may include actual or perceived concept from advertisement and spending power, which is associated with price and discount amount of a product (Beatty & Ferrell, 1998). Product's design and price or its discount can affect consumers buying. Retailers can increase the number of impulsive purchases through product displays, store and packaging designs, and contemporary marketing innovations (e.g., 24-hour convenience stores, television shopping channels, and internet shopping) (Hoyer & MacInnis, 1997; Jones et al., 2003). Other additional buying motivators are the price discounts or sales (Parsons, 2003; Virvilaite et al., 2009).

### 2.1.3 Situational Factors:

This category is devoted to all factors that can direct impulse buying act out of a person and a product. We can mention time available and self-service factors in this group. Environmental factors of the shopping area or the physical surrounding include: (1) general interior design – color, lighting, aroma, music, equipment, etc.; (2) arrangement of equipment and merchandise within the store; (3) display of merchandise; (4) point of sale promotional materials (Mihic, 2002).

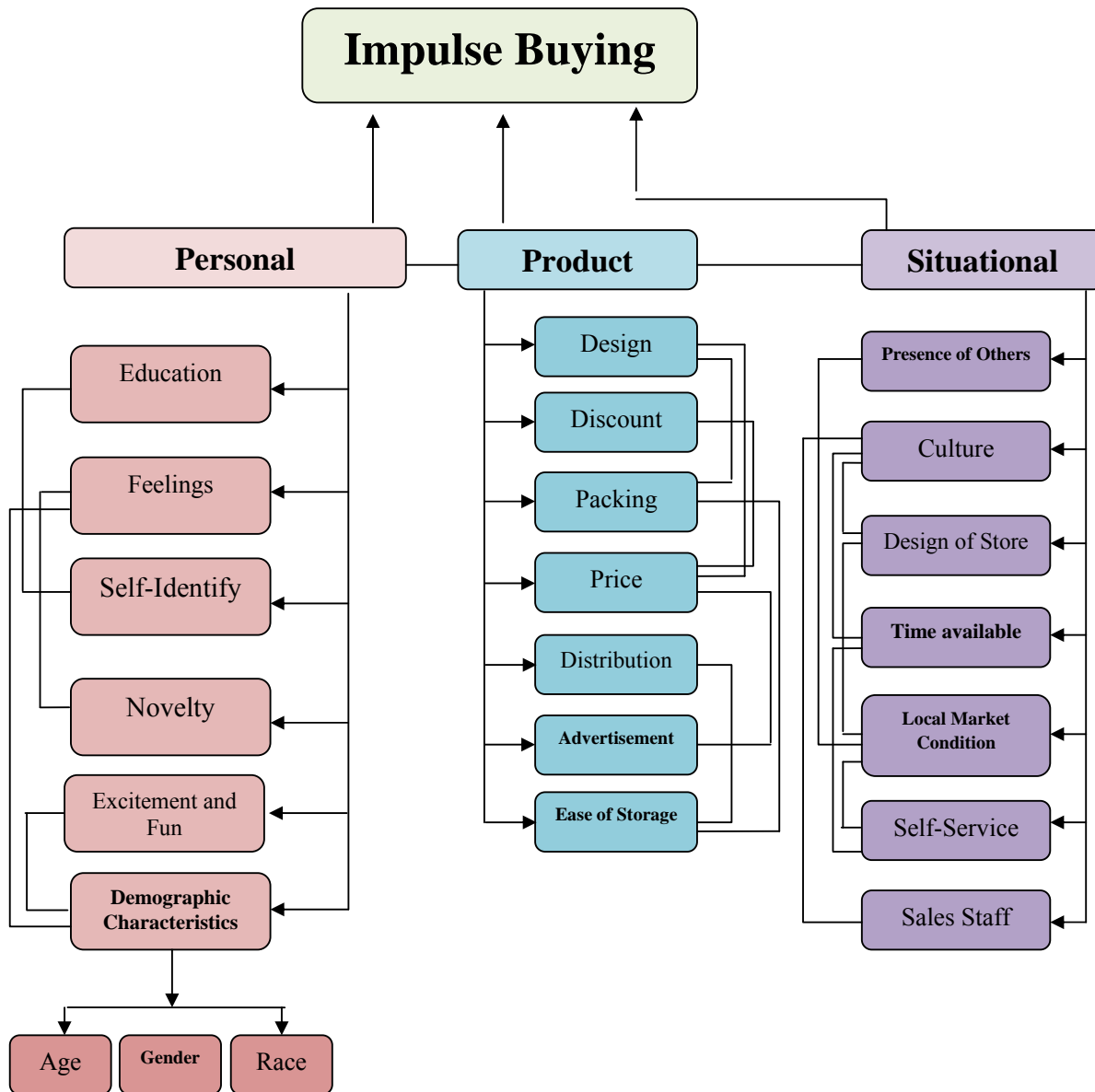
The more time is available, the higher is the chance for unplanned buying (Iyer, 1989; Iyer et al., 1989; Herrington and Capella, 1995; Nicholls et al., 1997; Underhill, 1999, Anic & Radas, 2006) especially when there is no buying task (Beatty & Ferrell, 1998).

Store accessibility and sales staff (Aylott & Mitchell, 1998) as well as the *location* (Hart & Davies, 1996) will affect the impulse buying act.

We are showing the factors collected from literature review in a model depicted below. As we mentioned before there are two different groups of factors influencing impulse buying act. As we are depicting in this model there some relationships between different sub-criteria of each group.

## 3. Analytical Network Process

Analytic hierarchy process (AHP) is one of the widely used approaches to handle such a multi-criteria decision making problems. There are several assumptions when AHP is implemented to make decisions, such as, the independence between higher level elements and lower level elements, the independence of the elements within a level, and the hierarchy structure of the decision problem (Saaty 1994, Saaty & Zoffer 2011). However, a significant limitation of AHP is the assumption of independency among different criteria of decision-making. Analytic network process (ANP), on the other hand, captures interdependencies among the decision attributes and allows a more systematic analysis. In addition, the interactions of decision attributes within the same level and the feedbacks between two different levels are important issues, which should be considered during the decision making procedure. Therefore, the AHP method does not work accurately when solving such decision problems (Saaty, 1996). ANP, as an extensive and complementary method of the AHP, was introduced and further developed by Saaty (1996, 1999, 2001, 2003, 2004, 2005, 2006, and 2008). On the contrary to AHP, ANP provides a more generalized model in decision-making without making additional assumptions about the independency of the higher-level elements from lower-level elements and also of the elements within a level. Despite all these features, the applications of ANP are not very common in a decision-making problem. However, in recent years, there has been an increase in the use of ANP in multi-criteria decision-making problems (Jharkharia & Shankar, 2007).



**Fig. 1.** Different factors affecting impulse buying act

ANP method can be used to make decision problems which cannot be structured hierarchically and does not have the inner-independent and outer-independent assumptions. Since its introduction, the ANP method is applied to diverse areas. It also allows inclusion of all the relevant criteria (tangible or intangible, objective or subjective, etc.) that have some bearing in arriving at the best decision (Saaty, 2005). The ANP is the most comprehensive framework for the analysis of societal, governmental and corporate decisions that is available today to the decision makers. ANP models have two parts: the first is a control hierarchy or network of objectives and criteria that control the interactions in the system under study; the second are other sub-networks of influences among the elements and clusters of the problem, one for each control criterion (Saaty, 2008). For devising an ANP model and solving it, Chung et al provided following steps: (Chung et al, 2005):

### **Step 1: Model construction and problem structuring**

The problem should be stated clearly and decomposed into rational system like network. The structure can be obtained by the opinion of decision makers through brainstorming or other appropriate methods.

**Step 2: Pairwise comparisons matrices and priority vectors**

In ANP, like AHP, decision elements at each component are compared pairwise with respect to their importance towards their control criterion, and the components themselves are also compared pairwise with respect to their contribution to the goal. Decision makers are requested to respond to a series of pairwise comparisons where two elements or two components at a time are compared in terms of how they contribute to their particular upper level criterion (Sarkis, 2003). The relative values are determined with Saaty's 1-9 scale (Table 1), where a score of 1 represents equal importance between the two elements and a score 9 indicates the extreme importance of one element (row component in the matrix) compared to the other one (column component in the matrix) (Sarkis, 2003).

Table 1  
 Saaty's 1-9 scales for AHP

Definition	Equal importance	Moderate importance	Strong importance	Very strong importance	Absolute importance	Intermediate importance
Intensity of importance	1	3	5	7	9	2,4,6,8

Like AHP, pairwise comparison in ANP is made in the framework of a matrix, and a local priority vector, which can be derived as an estimate of relative importance associated with the elements (or components) being compared by solving the following equation:

$$W_n = \begin{bmatrix} 0 & 0 & 0 \\ w_{21} & w_{22} & 0 \\ 0 & w_{32} & I \end{bmatrix} A \times w = \lambda_{\max} \times w \tag{1}$$

where  $A$  is the matrix of pairwise comparison,  $w$  is the eigenvector,  $\lambda_{\max}$  is the largest Eigen value of  $A$ .

**Step 3: Super matrix formation**

The super matrix concept is similar to the Markov chain process (Saaty, 2005). To obtain global priorities in a system with interdependent influences, the local priority vectors are entered in the appropriate columns of a matrix. As result, a super matrix is actually a partitioned matrix, where each matrix segment represents a relationship between two nodes (components or clusters) in a system (Sarkis, 2003).

Let the components of a decision systems be  $C_k$ ,  $k=1, 2, n$ , and each component  $k$  has  $m_k$  elements, denoted by  $e_{k1}, e_{k2}, \dots, e_{km_k}$ . The local priority vectors obtained in step 2 are categorized and located in appropriate positions in a super matrix based on the flow of influence from one component to another one, or from a component to itself as in the loop. A standard form of a super matrix is as in below:

$$W = \begin{matrix} & \begin{matrix} C_1 & C_2 & \dots & C_n \end{matrix} \\ \begin{matrix} C_1 \\ C_2 \\ \vdots \\ C_n \end{matrix} & \begin{bmatrix} w_{11} & w_{12} & \dots & w_{1n} \\ w_{21} & w_{22} & \dots & w_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ w_{n1} & w_{n2} & \dots & w_{nn} \end{bmatrix} \end{matrix}$$

**Fig. 2.** Super matrix

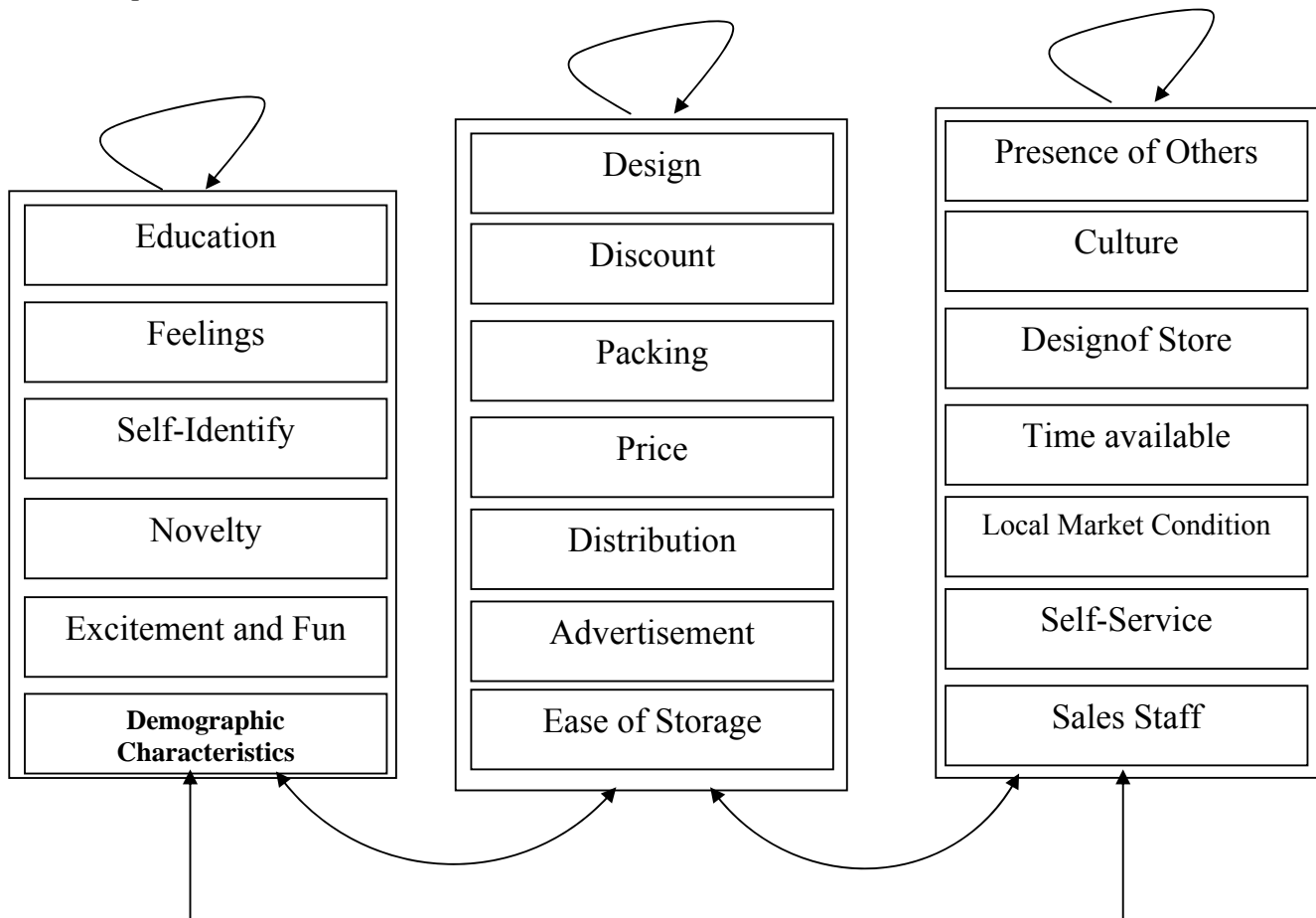
As an example, the super matrix representation of a hierarchy with three levels as shown in Fig. 2 (a), is follows (Saaty, 2005),

$$W_h = \begin{bmatrix} 0 & 0 & 0 \\ w_{21} & 0 & 0 \\ 0 & w_{32} & I \end{bmatrix}, \quad (2)$$

where  $w_{21}$  is a vector that represent the impact of the goal on the criteria,  $w_{32}$  is a matrix that represent the impact of criteria on each of the alternatives,  $I$  is the identity matrix, and entries of zeros corresponding to those elements that have no influence.

#### 4. Solving Impulse Buying Model

For solving this model, we reform our model in a simple figure to put in software. Fig. 3 is the simplified model.



**Fig. 3.** The final model of effective factors and their relationship

We gathered factors' weights from experts by using special ANP questionnaires. Then we put these gathered weights in the Supper decision software. Table 2 shows details of the results of our comparison using ANP implementation in terms of personal group factors,

**Table 2**

The results of ANP implementation for ranking personal group factors

Factor	Education	Feelings	Self identify	Novelty	Excitement and fun	Demographic
Relative importance	0.07466	0.27060	0.10504	0.04546	0.15153	0.35272

As illustrated from the results of Table 2, demographic characteristic factors receive the highest ranking (35%) followed by other factors are Feelings, Excitement and Fun, Self Identify, Education and Novelty. Table 3 presents details of the weighted matrix in terms of personal figures.

**Table 3**

Weighted matrix in terms of personal figures

	Demographic	Education	Excitement and fun	Feelings	Novelty	Self identify
Demographic	0.000000	0.370250	0.577265	0.569946	0.560275	0.551301
Education	0.087133	0.000000	0.058647	0.104417	0.047054	0.044230
Excitement and fun	0.191937	0.129051	0.000000	0.210054	0.112570	0.116563
Feelings	0.477833	0.383270	0.237867	0.000000	0.240035	0.252171
Novelty	0.045266	0.048247	0.044826	0.056691	0.000000	0.035735
Self identify	0.197830	0.069181	0.081395	0.058893	0.040066	0.000000

There are three sub-factor associated with demographic characteristics including gender, age and race and the weights are 0.46748, 0.42668 and 0.10584, respectively. As we can observe, gender is the most important factor followed by age and race. Table 4 demonstrates details of weighted matrix in terms of demographic characteristics.

**Table 4**

Weighted matrix in terms of demographic characteristics

	Age	Gender	Race
Age	0.000000	0.875000	0.166667
Gender	0.888889	0.000000	0.833333
Race	0.111111	0.125000	0.000000

In terms of product, the relative priorities of advertisement, design, discount, distribution, ease of storage, packing and price are 0.23483, 0.10406, 0.29533, 0.03103, 0.08155, 0.06186 and 0.19133, respectively. As we can observe advertisement and price are the most important factors in this group. The weight factors of these items are summarized in Table 5.

**Table 5**

Weighted matrix in terms of product

	Advertisement	Design	Discount	Distribution	Ease of storage	Packing	Price
Advertisement	0.000000	0.244810	0.446136	0.224471	0.220273	0.144890	0.228456
Design	0.128767	0.000000	0.147434	0.060432	0.105816	0.057559	0.084747
Discount	0.356546	0.391287	0.000000	0.359372	0.397042	0.423168	0.528781
Distribution	0.030397	0.032430	0.031456	0.000000	0.034236	0.031213	0.034131
Ease of storage	0.104221	0.082159	0.102732	0.084102	0.000000	0.071168	0.058417
Packing	0.088308	0.058956	0.057116	0.037512	0.054332	0.000000	0.065468
Price	0.291762	0.190359	0.215226	0.234112	0.188310	0.272002	0.000000

The other factor is associated with situational factors' group, which includes presence of others, culture, design of store, time available, local market condition, sales staff and self service with the relative importance of 0.04296, 0.08733, 0.12130, 0.22217, 0.05643, 0.15346 and 0.31635, respectively. The weight factors of these items are summarized in Table 6.



**Table 6**  
Weighted matrix in terms of situational factors

	Presence of others	Culture	Design of store	Time available	Local market condition	Sales staff	Self service
Presence of others	0.000000	0.079506	0.086985	0.119945	0.096241	0.101859	0.092846
Culture	0.070697	0.000000	0.060418	0.103904	0.141247	0.163229	0.152948
Design of store	0.034970	0.049330	0.000000	0.034866	0.073378	0.069528	0.056900
Time available	0.044971	0.034551	0.033251	0.000000	0.047657	0.046817	0.048787
Local market condition	0.113607	0.121763	0.108395	0.165670	0.000000	0.230578	0.191714
Sales staff	0.513265	0.511892	0.476941	0.432397	0.407001	0.000000	0.456796
Self service	0.222489	0.202957	0.234010	0.144098	0.234405	0.387989	0.000000

Finally, the main three factors of personal, product and situational are ranked using the proposed model of this paper and the relative importance of these factors are 0.38462, 0.18462 and 0.43077, respectively. Table 7 shows details of the weighted relative importance.

**Table 7**  
Weighted matrix in terms of the main factors

	Personal	Product	Situational
Personal	0.000000	0.333333	0.750000
Product	0.200000	0.000000	0.250000
Situational	0.800000	0.666667	0.000000

## 5. Discussion and conclusion

After understanding the importance of impulse buying in forming consumers' behavior, we decided to extract different factors that are effective in impulse buying. So we categorized these extracted factors from literature review in three groups and asked experts to weight these factors one by one. We utilized an ANP model because there are meaningful relationships between sub-factors in each group and between the groups. Then we put these gathered data in Super decision software and gained presented results. Based on our experts' opinions, situational factors category is the most important factor, which must be considered by decision makers. Then personal and product related factors are in the importance rank. Other ranking results are presented in different tables and decision makers can use from these ranked factors for directing their customers' behavior on buying impulsively.

For further studies, we suggest other weighting methods like Entropy and utilizing Fuzzy methods for better conformity.

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