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The online buying process in the fashion industry

Abstract

This study seeks to explore the effects of key psycho-social variables that influence online fashion purchase, distinguishing the two main categories, rational and emotional variables. Therefore the study has provided for the assessment of variables derived from different models, leading to a more detailed and accurate picture of the behavior of online fashion purchasing. This study integrates, enjoyment and trust into technology acceptance model (TAM) in order to understand consumer acceptance of fashion e-commerce. Particularly shopping enjoyment and trust play significant roles in consumers' adoption of fashion e-shopping.

Introduction

Increasingly in the Western world the concept of rational utility product of rational behavior has given way to the concepts of emotional behavior, and psychological utilities also purchase becomes a phenomenon that responds to other needs: a psychological filler, a therapy for repairing negative emotional states, a way of affirming and so on. In postmodern society, the attention is increasingly focused on the relationship between product and consumer and the ability to provide psychological explanations through this connection. Customer satisfaction for the product or service purchased comes not only from extrinsic reasons, but also from personal and emotional response linked to the pleasure of the purchase itself. This seems correct for both offline and online purchases. The postmodern consumer well knows what he needs, to be induced to consumption, to give way to the wishes and desires regarding the experiences and emotions, to be able to live moments of true psychological gratification.

The process of choice becomes more an act of communication through which transmit to themselves and to others on a self-image. The property consumer report that is more symbolic, in response to expressive needs of social representation of its complex personality: from well-tool, in essence, become well-message. It is therefore not only the excess of supply, information that bears consumers to use their instincts, their beliefs in purchasing decisions. It is not just a matter of time, capacity, energy which limits the rational approach in purchasing behavior, but is the different buying motivation that leaves room for emotional choices. For

postmodern consumers the needs give way, as inducers of consumption, to the wishes, the desires, the emotions and the experience moments of true psychological satisfaction. In the shopping process, then, recreation and fun become very important. Through creativity, originality of merchandising, shopping must stimulate all the senses and must provide not only goods and souvenirs.

It is not a coincidence that is online sales of apparel sector to have more difficulty to develop. It is, in fact, an offer not so much characterized only by the functional dimension (performance-related deals), but by the semiotic and psychological dimension. The clothing industry is increasingly characterized by an offer whose value is linked to the role of the product as a means of communication to oneself and others and the evocative power (eg, the affective and emotional) that the same holds for individuals.

A previous research on online stores (Khakimdjanova, Park, 2005) has shown that shopping sites for clothing are the most visited by women and it is this segment that the increase in online sales have a greater correlation with the introduction of new technologies for visualization of products. However, online shopping in the clothing sector has not yet taken off due to the intrinsic nature of the mean that does not allow the development of sensory experiences and physical inspections on the product (Greenspan, 2003). 85% of women who visit the sites say that they do not buy clothes because of the impossibility of trying the articles and thus be able to assess the extent and visibility. Approximately 58% of women also complain that the inability to see the articles in detail to be able to examine the individual attributes. The faithful reproduction of the colors of the garment on the screen appears to be a further cause of concern for online shoppers. Only clothing for children and early childhood has in fact had a significant increase in online sales as it relates to shopping activities that do not require the buyer a high level of sensory experience (retail apparel sales, 2000).

In order to meet the needs of consumers about the sensory experience and the search for information online, there is the need to improve and develop the emotional aspects. This could help to create a virtual environment in some ways similar to traditional retail outlets.

Literature review

When the user interfaces with a new technology, it is possible to identify a number of factors which influence the decision to use this technology in addition to the mode and time of use.

The TAM model (Technology Acceptance Model) suggests that the perceived ease of use and usefulness of a technology are good predictors of the attitude and intention of potential users who may then choose to utilize (or not to utilize) that technology based on those initial perceptions. The addition of external agents can influence the use of technology by changing the perception of ease of use and usefulness of the system introduced. In a later version of the model, called TAM2 (Venkatesh and Davis, 2000), the two variables "attitude" and "intention to use" have been merged in a single construct.

Several studies (Adams et al., 1992; Davis et al., 1989; Hendrickson et al., 1993; Segars and Grover, 1993; Subramanian, 1994; Szajna, 1994) confirmed the validity of the TAM model to explain the phenomenon of acceptance of new technologies in various fields, including the banking sector (Adamson and Shine, 2003), writing programs and word processing (Davis et al., 1989), applications relating to spreadsheets (Mathieson , 1991), use of web browsers (Morris and Dillon, 1997), the Internet (Koufaris, 2002), mobile commerce (Bruner and Kumar, 2005), online games (Hsu and Lu, 2004), email (Huang et al., 2003), Lotus notes (Li et al., 2004), telemedicine (Chau and Hu, 2001 Hu et al., 1999), and so forth.

The original model has repeatedly been the subject of studies designed to extend the search for variables that may influence the main constructs, perceived ease of use, and perceived usefulness. For example, Venkatesh and Davis (1996) introduced the concept of a perceived self which acts on the perception of ease of use before a difference of objective usability can be determined when actually using it. Also the ease of use would suffer the effects of control (perceived self in the use of computers and facilitating conditions), the intrinsic motivation (enjoyment in using the computer), and emotions (anxiety in using computers) (Venkatesh, 2000). Venkatesh and Davis (2000) introduced the processes of social influence (subjective norms, voluntariness and image of who uses the technology) and cognitive instrumental processes (importance of the activity that you want to play with technology, the desired quality of results, proof of results and perceived ease of use).

In many cases, the TAM has been borrowed from the workplace and implemented in the study of e-commerce, incorporating aspects that are both hedonistic and utilitarian. Some researchers have therefore suggested the introduction of additional factors such as trust or e-trust (Jarvenpaa et al., 2000, Gefen and Straub, 2003; Pavlou, 2003), and the level of fun or

enjoyment (Van der Heijden and Verhagen, 2004). In particular, given the open and global nature of the Internet as an infrastructure for commercial transactions, trust makes for a crucial factor in e-commerce (Hoffman et al., 1999). Likewise, the perceived potential for fun is a factor that impacts on the use of new technologies in general (Bruner and Kumar, 2005; Lee et al., 2005). Incorporating hedonistic aspects of the technology adoption Davis, Bagozza and Warshaw (1992) have extended the original TAM model to introduce the perception of entertainment as a factor influencing the adoption of technology. Regarding e-commerce the two strands in the literature, the utilitarian and the hedonistic, were analyzed by Scarpi, Dall'Olmo Manaresi and Riley (2006).

Research hypothesis

The factors or constructs used in this study were measured by using items already validated in previous researches and have been adapted to the case of e-commerce. In addition to these constructs, additional information was collected on gender, age, educational qualifications and employment. In particular, the factors or constructs used in the analysis are the following:

- facilitating conditions;
- perceived self efficacy;
- experience;
- perceived usefulness;
- perceived ease of use;
- subjective norms;
- playfulness;
- e-trust;
- intention to buy online.

Facilitating conditions

Conditions defined as facilitant factors also support and represent the perception that the individual has the technical and organizational infrastructure required to support the use of the information system (Venkatesh *et al.*, 2003). This construct has strong similarities with the perceived behavioral control in TPB (Ajzen and Fishbein, 1980). In studies, systems related to Web facilitant conditions are translated into items related to ease of connection to the Network.

Perceived self efficacy

The perceived self was theorized by Bandura (1977) in the field of social cognitive theory. According to Bandura, perceived self is the conviction of the individual that they will be able to obtain the desired result with success. The self-efficacy is thus divided by outcome expectancy, which refers to the probability estimated by

individuals that a certain behavior will lead to certain outcomes. The Theory of Planned Behavior can be applied to perceived self via the perceived behavioral control variable—that is, the individual's perceived ease or difficulty in succeeding in a certain behavior (Ajzen, 1988).

Experience

The construct consists of the level of knowledge of the technology in question acquired through use and practice.

Experience facilitates the acquisition of information and increasing individual knowledge, which can alter initial perceptions (Venkatesh and Davis, 2000, Min and Galle, 2003).

Perceived usefulness

Perceived usefulness was defined by Davis (1989) as the degree to which a person believes that using a particular system would enhance his or her job performance.

The items used in this work were taken from Davis (1989) and Davis *et al.,* (1989) and adapted to the case of electronic commerce.

Perceived ease of use

Perceived ease of use represents the level of physical and mental effort that users expect to expend while considering use of the technology or the perception of the degree to which the use of a particular system would be free from effort (Davis, 1989). Again, the items used were adapted from Davis (1989) and Davis et. al. (1989).

Playfulness

The hedonism of an action reflects its potential in terms of emotional impact and fun. Customer satisfaction comes not only from the extrinsic reason for the product or service purchased, but also from personal and emotional response connected to the pleasure of it. This is true for both offline and online shopping (Jarvenpaa and Todd 1997; O'Cass and Fenech

2003; Shang *et al.*, 2005). The items used were derived from the study conducted by Davis *et al.* (1992).

Subjective norms

Subjective norms are the rules by which operates the subjective motivation of individuals to act consistently with the views of the individuals' peer and social group. This concept is taken into account in many models traditionally used to study the adoption of e-commerce, such as the Theory of Reasoned and Action and the Theory of Planned Behavior, although not in the TAM model. Bandura (1977) argues that individuals learn and adopt the behaviors that operate within their social groups.

Social norms and networks of interpersonal communication have a decisive role in the adoption of new technologies. In the present study the measurement of subjective norms was already validated by Taylor and Todd (1995).

E-trust

In different areas in which it was studied (i.e. organizational behavior, sociology and social psychology), the concept of perceived safety has different, often even abstract and complex meanings. In terms of the acceptance of technology, Chervany McKnight (2001) defined safety as the perceived belief that the new technology is reliable and credible. Pavlou (2003), in the context of business to consumer ecommerce, has referred to trust as "the belief that allows consumers to willingly become vulnerable to Web retailers after having taken the retailers' characteristic into consideration."

Confidence in both the seller and in the Internet is a determinant of consumer perception of safety. The perceived safety, then, is measured relative to both the seller online and compared to the security of the e-commerce system used.

Intention of use, as considered in this analysis is the dependent variable. It is predictive of the actual rate of adoption of technology as well as of the intention of the consumer to use the site to make an online purchase. This item was adopted from Davis (1989) and Davis *et al.,* (1989).

The first hypothesis (H1) the was therefore that the presence of a technical infrastructure that allows easy connection to Internet has a positive influence on the intention of buying online. The second hypothesis (H2) of research is that greater self-efficacy perceived by the users of

the site would lead to a higher level of intention to purchase online. The third hypothesis (H3) that is tested is the past experience in online buying, the same should have a positive influence on online purchase intention. The fourth hypothesis (H4) of research is that the perception of the usefulness of the website causes the increase in online purchase intention. The fifth hypothesis (H5) focuses on the perceived ease of use, so if the e-commerce Website is perceived as easy to use the intention to purchase online will grow. The sixth hypothesis (H6) concerns the subjective norms, which indicates that the purchase intention of the customers would be greater if the people who they believe are relevant agree to the purchase. The seventh hypothesis (H7) of this research is that the perception of the ability of the site to entertain and emotionally involve will increase the purchase intent. The last hypothesis (H8) of research is that the reliability of the seller and the online purchase in other words the perceived safety, influences positively the intention to purchase.

Figure 1 - The causal relationships between constructs
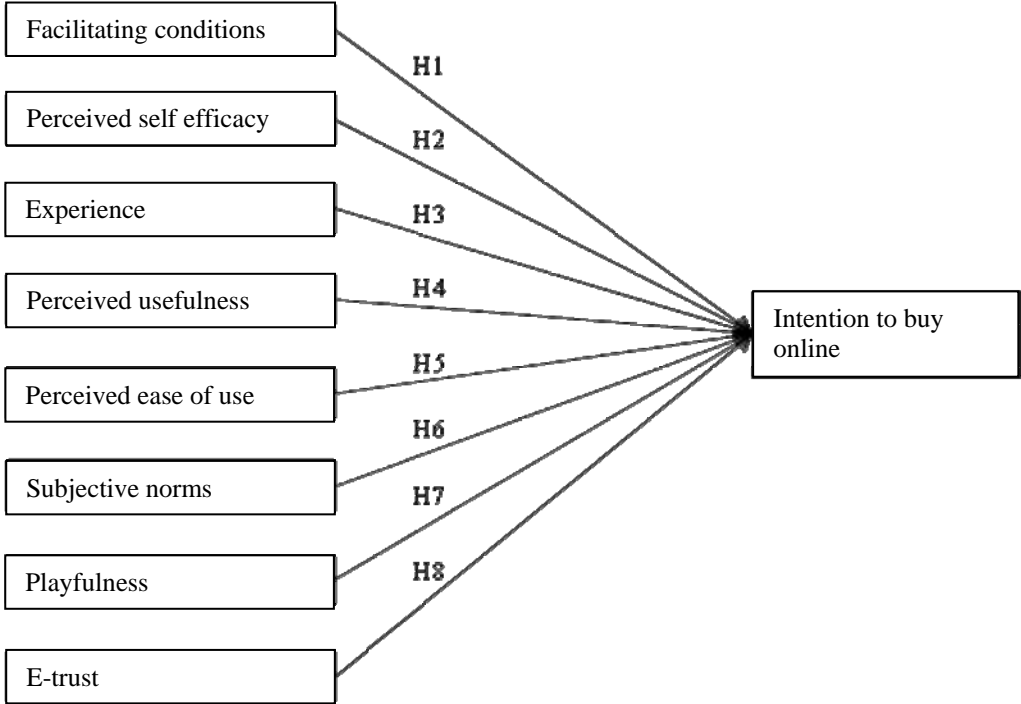
The survey

The variables taken into consideration have been jointly tested through an empirical research, conducted by submitting a questionnaire to the users of an e-commerce website in the fashion

industry[1]. The questionnaire administered to users of the site consists of 22 questions. Most of the items included in the questionnaire, including the one on the dependent variable, are measured with a Likert scale using 6 levels ranging from "strongly agree" to "strongly disagree." Some items are of a binary type. Some variables used were analyzed as quantitative variables, others as ordinal and nominal.

The questionnaire was administered online to users of a fashion web site. The responses received numbered 635, of which 549 were considered useful for analysis. Using the statistical methodology described below, cases with missing data were not excluded. Only those with a missing response rate exceeding 50% were excluded.

Four types of explanatory variables have been used in order to identify the profile of the respondents related to gender, age, level of training and profession. Below (Table 1) are given the characteristics of the components of the sample.

Table 1 - The profile of respondents

Gender	Women	44,9
	Men	55,1
Age	Less than 30 years	23,2
	Between 30 and 49 years	54,9
	Over 50 years	21,9
Level of training	elementary-school	7,1
	High school	54,8
	University	26,3
	Post-graduate training	9,7
Employment status	Student	10,8
	Employee	38,4
	Manager	5,2
	Freelancer	14,8
	Entrepreneur	7,2
	Military	1,8
	Pensioner	5,9
	Unemployed	4,1
	Other	11,3

Source: Research Data

[1] http://www.whoswhoshop.it

Research Methodology

The idea is to understand the relationship between the dependent variable (in our case the intention of online buying investigated) and a set of predictors (items or constructs of the questionnaire). In other words, the results will describe social characteristics that lead a consumer to buy / not buy from a site.

The data first have been processed using the CART (classification and regression tree) technique. This technique, introduced by Leo Breiman, Jerome Friedman, Richard Olshen and Charles Stone in 1984, shows the results as a reversed tree diagram and has proved a very flexible. This methodology leads to the construction of a regression tree, whose predictors are the variables previously mentioned, while the dependent variable is related to the propensity to buy on this website. The tree, so generated, allows a clustering process of the respondents. They are divided into groups, which are internally homogeneous with respect to the dependent variable (intention to buy on the Website).

The characteristic that distinguishes this technique from other traditional statistical procedures is the relative ease with which new insights can be gained. Further, the tree structure allows the output to CART to treat large data sets and very complex data structures, which permits the use of continuous independent variables, categorical or continuous and categorical together. The CART is, therefore, a procedure that can be used to analyze data both qualitative (classification) and quantitative (regression). Being a non-parametric procedure is not necessary to excuse a normal or other assumptions regarding the statistical distribution of data. The CART can also prosecute cases with missing data.

The advantages of this technique are also due to the ease of interpretation of results (interpretability) with the same accuracy (accuracy). The trees, when used in the particular case of complex data with many independent variables, may provide an error rate significantly lower than that produced by the usual parametric procedures such as discriminant analysis or logistic regression.

All this makes the technique useful to assess the constructs proposed by previous models without taking into account the relationships between variables in the same proposals. In addition, the algorithm is able to automatically select the most significant variables.

Among the negative aspects it is possible to underline the instability of the technique. To overcome this problem ensemble learning techniques, like the Random Forest, are used. This procedure leads to alter more accurate estimates. For this reason a second statistical technique was used in this research, the Random Forest. It led to the creation of the Variable

Importance. The Random Forest algorithm estimates the importance of a variable in relative terms.

Data analysis and results

Starting from these considerations, the first aim in this study was to create a hierarchical segmentation of the population using the CART. The terminal nodes, or the tree's final determinations, contained sets of observations forming very homogeneous but different classes. The tree allows the clustering of respondents, which are divided into groups that are homogeneous within them in respect to the dependent variable (propensity to buy).
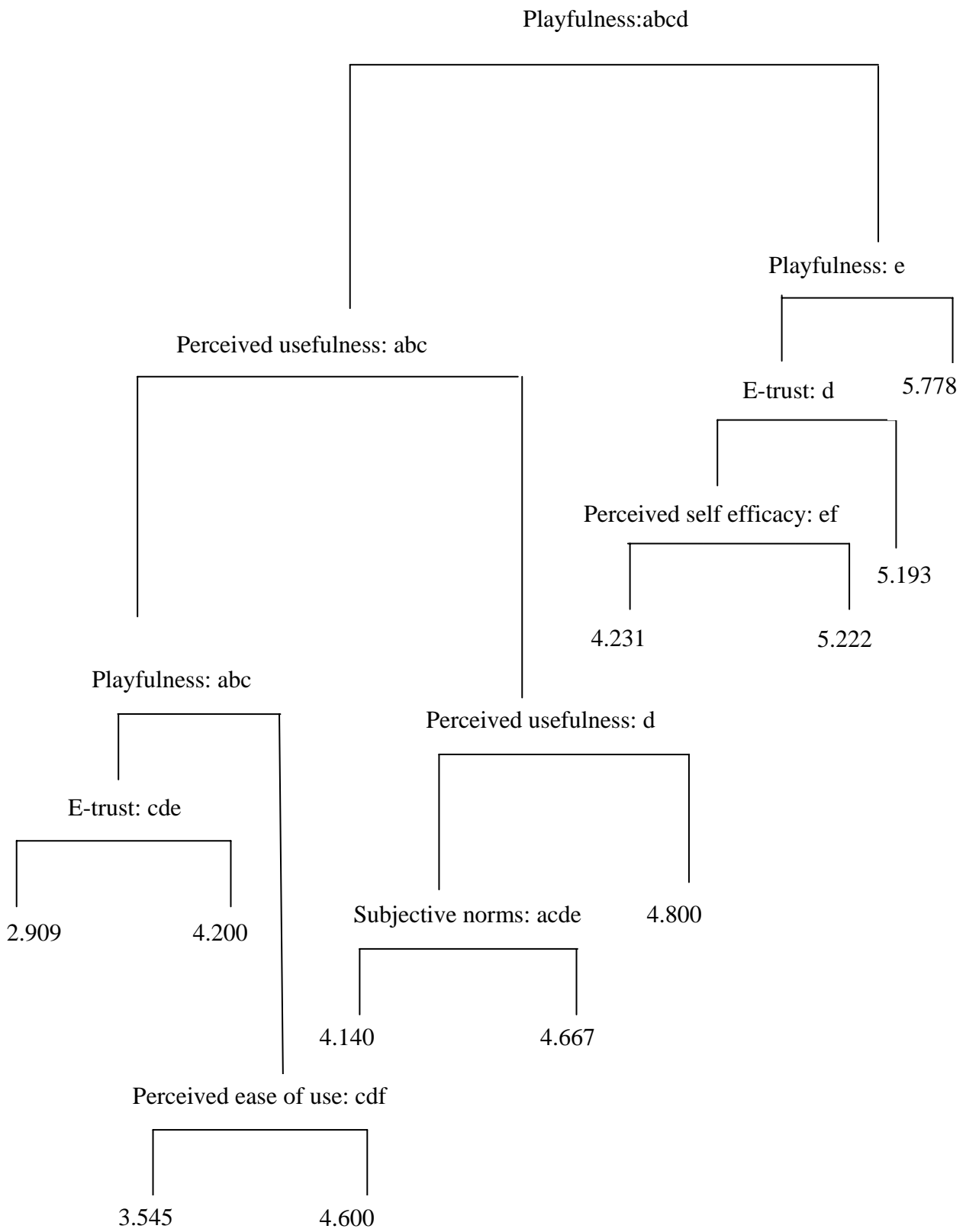
The variables by which it is first segmented into clusters are explanatory of the phenomenon in question and have a predictive value. The final tree obtained by analysis includes, in facts, only those independent variables that are predictive of the dependent variable. The other independent predictor variables did not affect the final result. The dependent variable has been treated as a continue variable. This has allowed us to grow a regression tree instead of a classification one.

Firstly, it is possible to note how the tree generated (fig. 2) has given interesting results. It, already on the first split of the first variable, divides quite clearly on right the respondents that on average have a strong propensity to buy and on the left the respondents with a lower propensity to buy.

At this point, it seems useful to comment the most significant leaves which showed values closer to 6 (strongly agree level on the Likert scale) and therefore related to those who are more willing to purchase and on the opposite side leaves that generated values closer to 1 (strongly disagree) and represent the people less willing to purchase online.

The first leaf showed a value of 5,778 (average responses to the purchase intent), therefore represents the subjects that strongly agree with the intention to buy online, these subjects also strongly agree with perception of the variable of the playfulness of Web site. So they found the site fascinating and impressive at an emotional level. That is to say that users of a site that judge fun have a high probability to purchase online at the same site.

Fig. 2: Regression tree

Playfulness:abcd

Perceived usefulness: abc

Playfulness: e

E-trust: d

5.778

Perceived self efficacy: ef

5.193

4.231

5.222

Playfulness: abc

Perceived usefulness: d

E-trust: cde

Subjective norms: acde

4.800

2.909

4.200

4.140

4.667

Perceived ease of use: cdf

3.545

4.600

Source: Research Data

The second leaf resulted in an average value of 5.193. In this case the variable of playfulness appears twice. We find here people who have seen the site very funny, in addition, they strongly agree with the statement that the site was secure. That is to say that users of a site that judge it fun and secure have a high probability to purchase online at the same site.

Cart analysis confirms that, in addition to utilitarian aspects of online use, the perception of the usefulness of the system, very important seem to be the hedonistic aspects related to the higher or lower emotional commitment.

Fig. 3 Variable importance

Mean Decrease in Accuracy− Random Forest
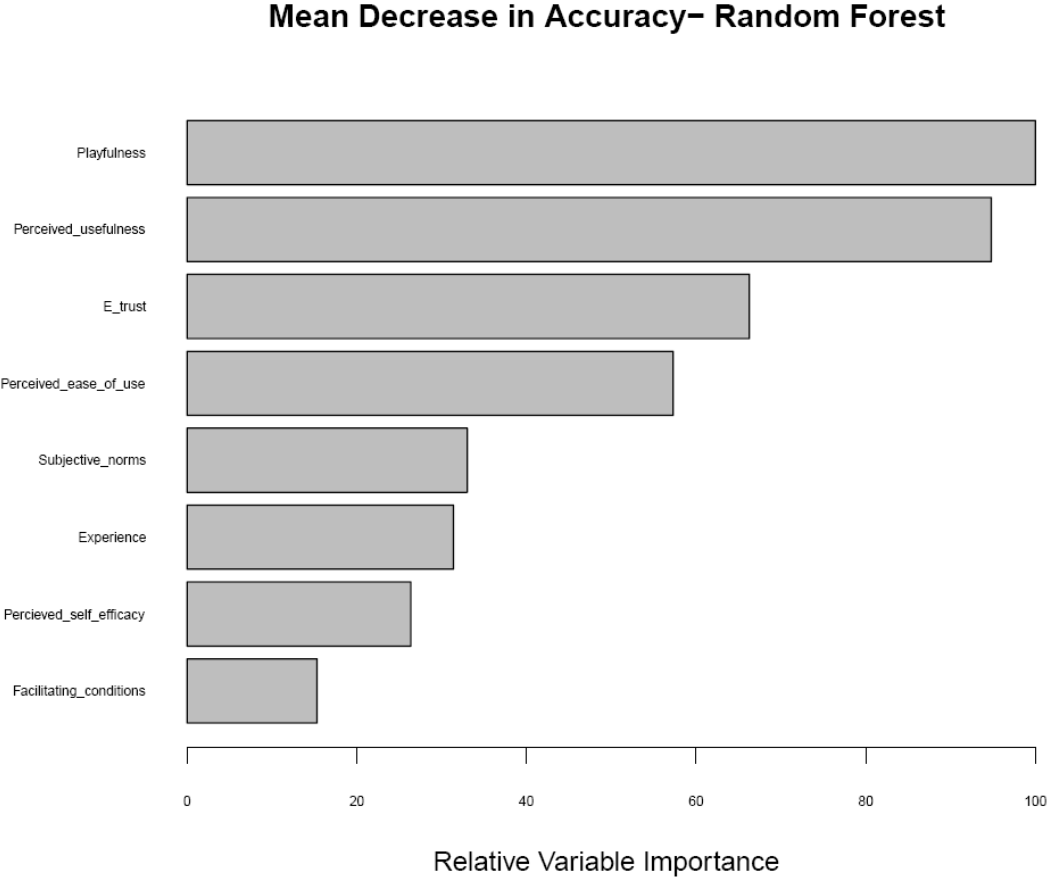
Source: Research Data

After the Cart analysis a Variable Importance analysis was conducted, using the Random Forest technique. The result is a classification of the used variables that shows the relative importance of the variables starting from the most important down to the less important.

The Variable Importance created (fig.3) shows that in the first instance, the online purchase intention is influenced by the construct of the playfulness, followed by the perceived usefulness, perceived security and perceived ease of use. The Variable Importance analysis confirms that the hedonic aspects of the online purchase are more crucial than the utilitarian aspects.

The hypothesis H7 (playfulness), H4 (perceived usefulness), H8 (e-trust) and H5 (perceived ease of use) seem to be confirmed while the others refer to variables that are not so relevant.

Conclusions and managerial implications

Motivations to engage in retail online shopping can include both utilitarian and hedonic shopping dimensions. The hedonic aspects are related to a greater or lesser emotional involvement in the buying process, which, in turn, is generated by the entertainment potential of the website. To cater to these consumers, online retailers can create a cognitively and esthetically rich shopping environment, through sophisticated levels of interactive web utilities and features, offering not only utilitarian benefits and attributes but also providing hedonic benefits of enjoyment. This study presumes that websites with a playful potential can influence online consumers' shopping motivations and entice them to modify their original shopping predispositions by providing them with attractive and enhanced interactive features and controls, thus generating a positive attitude towards products and services offered by the retailer. In the fashion industry a considerable part of the good value is sold, through experience, in the context of purchasing and consumption (Grandinetti, 2008).

It is possible to conclude that, already during the e-commerce website creation, a great attention should be paid to increase the potential features of participation, involvement, interaction and fun. Shopping online should, therefore, generate recreation and fun, through creativity, environment originality, visual merchandising. It should not only provide goods and services, but stimulate the emotional side of the users. All these approaches emphasize, in fact, a search for aesthetic pleasure and the senses, sometimes nostalgic, but always attributed to the need to escape, fun and food of an emotional relationship with the consumer. All the most successful web applications are characterized by a careful study of the interface that is

often able not only to facilitate the goals of persons involved in the community, but also to implement all these cognitive and emotional pressures that make user experience pleasant and rewarding. To this end, often playful talk about user experience or the ability to set up mechanisms at the playful use interface so as to provide the user experience more satisfying and profound. Pictures, sounds, games are just some sensory stimuli directed to consumers and each represents a potential switch of emotion, positive or negative.

Consumer choice in taking part in e-commerce certainly has an emotional determinant. Because of this, it is already evident that ecommerce sites, even at the functional and graphic design stage, should consider elements that make it possible to increase the potential for participation, engagement, interaction and fun. Moreover, the perceived safety, and therefore the trust in online commerce sites, seems to correlate with a higher purchase intention than the elements of usability or ease of use, which should also be taken into account in e-commerce web design. In conclusion, the big importance given to the perceived usefulness suggests that the marketing managers plan carefully their policies of price and product on the Net.

By knowing which web site attributes influence consumers' intention to buy online e-retailers can improve their e-shopping sites. They must remember that customers are not only web users with trust/safety and information needs, but also shoppers with service and experiential needs.

If the results suggested here are confirmed by further experiments, new models can be constructed to explain the choices made by individuals in conjunction with e-commerce. We could, in fact, study the relationships between variables, omitting those which have been eliminated as a result of this analysis. In the future, the same type of study could also be conducted and the differences observed when different types of online products and services are offered. Indeed, we believe that the variables used will lead to different results in different areas. Of course an inherent limitation of this research lies in the fact that the current study has been restricted only to the users of one Web site. This means that users had likely already developed a preference for the site they used, even if the data on past purchases on the site itself is not too high. Still, the results to date offer some interesting food for thought for managers as well as academics.

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