Factors Determining Mobile Shopping. A Theoretical Model of Mobile Commerce Acceptance

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Abstract

Nowadays, we live in a society focused on mobile devices. The development of mobile technologies is opening important perspectives in the field of marketing. In order to make marketers adopt the best strategies, it is very important to analyse and understand the different factors that influence consumers’ acceptance of mobile technologies for online shopping.

The aim of this paper is to understand which technological, psychological and/or social factors encourage people to accept mobile commerce. This paper particularly analyses the weight of social influence on the intention to use mobile technologies for shopping purposes. Two integrated methods: in-depth interviews and Open Space Technology have been carried out to identify the main factors that influence the acceptance of shopping using mobile technologies and to validate a new model. Starting from the results of the qualitative analysis, we propose a new theoretical acceptance model based on the circularity of social influence: the Mobile Commerce Acceptance Model (M-CAM).

Keywords: Mobile Commerce, Consumer’s Acceptance, Technology Acceptance Models

1. Introduction

Mobile technologies, such as PDAs, pocket PCs and cell phones, are transforming interpersonal communications. These are becoming independent from a fixed location, producing the so-called “situated nowhere phenomenon,” by which communication occurs everywhere, enhancing the freedom of movement. This transformation is increasingly involving everyday human activities. This is the reason why many companies are organizing their activities considering the opportunities offered by mobile services, such as all the services connected to mobile commerce and mobile marketing. Mobile marketing (M-marketing) is defined as “the transactions of commodities, services, or information over the Internet through the use of mobile handheld devices” [1]. M-marketing has generally been considered as “an extension of marketing 2.0 beyond the static terminal of the PC/TV to anytime, anyplace, anywhere on mobile and other wireless devices” [2]. The mobile is the most widespread tool among consumers as well as the most personal one, with immediacy characteristics, geolocation, and very strong interaction. The big changes in terms of the diffusion of intelligent devices (smart phones), the growth of mobile Internet browsing, and the new paradigm of the Mobile Application Store, make it a highly attractive channel for companies communication and marketing activities.

The rapid growth of mobile commerce is associated with an increasing level of consumer’s experience with mobile devices. In 2011 in Italy, about 20 million users had a smart phone, this number has increased by 52% compared to 2010 [3]. According to a research commissioned by Google to Ipsos MediaCT (July, 2011) (www.ourmobileplanet.com) 53% of the respondents use these tools every day to surf on the Internet wherever they are. The proportion of people who have started to use the smart phone to buy directly on the web has also increased. 23% of them had in fact already made a purchase via mobile and 72% of smart phone owners remember to have noticed an advertisement on their mobile. This trend is very likely to grow in the near future. According to data reported by Google, the volume of searches through mobile of 2011 increased by 224% compared to 2010. In fact, 53% of the respondents said to use mobile devices for daily researches, while 29% of them use them only weekly. Moreover, 78% of the respondents use them to find local information, while 43% of them use these devices to look products and services. Finally, 35% of the respondents had already visited a business website before activating a service. (www.ourmobileplanet.com). According to [3], Italy is the market where mobile devices owners are more likely to click on an advertisement and to seek information about a product, these data show that investing in the mobile market is an emergent and great opportunity if we consider...
the preferences of the Italian population. In order to make marketers adopt the best strategies it is very important to understand consumers’ acceptance of mobile technologies for online shopping.

This paper analyses the positive and the negative aspects that influence people’s intention to use mobile commerce and in particular the technological, the psychological and the social factors that encourage people to accept mobile commerce. The paper starts from the hypothesis that consumers’ purchase decisions are strongly influenced by social media and by the consumer’s social groups. Moreover, it is important to consider that this same user will in turn influence others to make similar purchases. Two integrated methods (in-depth interviews and Open Space Technology (OST)) were performed and used to define and validate a new model of consumers’ acceptance for mobile commerce that considers the circular influence of different characteristics and factors on its use.

2. Background

User’s acceptance of technology has been an important field of study in the last twenty years. Several models have been developed to represent, explain and predict user’s acceptance such as: the Theory of Reasoned Action (TRA) [4-5]; the Theory of Planned Behavior (TPB) [6]; the Technology Acceptance Model (TAM) [7]; the TAM 2 [8]; the Unified Theory of Acceptance and Use of Technology (UTAUT) [9].

According to the Theory of Reasoned Action, social behavior is motivated by an individual’s attitude towards executing that behavior. The main factors that determine behavioral intentions are: the person’s attitude towards the behavior (which refers to the person’s judgment that performing the behavior is good or bad) and subjective norms (which reflect the person’s perception of social pressures put on him/her to perform or not that behavior or not). The TRA was extended by the theory of planned behavior, claiming that behavior can be deliberative and planned as it introduces the "perceived behavioral control." It is related to the extent to which the person believes that s/he has control over personal or external factors that may facilitate or limit behavioral performances [10]. TPB suggests that individual’s behavioral intentions and behaviors are shaped together by their attitude towards behavior, subjective norms, and perceived behavioral control. The most famous and applied model is the Technology Acceptance Model. It is derived from the Theory of Reasoned Action of [5] and deals with users’ acceptance and use of technology [7].

The TAM considers different connected factors to explain users’ acceptance towards a new technology (see Figure 1):

- **The External Variables** affect the perceived usefulness, the perceived ease of use, and the attitude towards using a technology.
- **The Perceived Usefulness** refers to people’s perception that the use of a particular technology will improve their ability in doing daily actions or their work performances [8].
- **The Perceived Ease of Use** refers to the required effort to use the system, and then to the people’s perception that using a particular technology will be easier [9].
- **The Attitudes towards Use** designates the users’ desirability to use a particular technology [11].
- **The Behavioral Intention to Use** is foreseen by the attitude towards use in combination with the perceived usefulness.
- **The Actual System Use** is foreseen by the behavioral intention.

![Figure 1. “Technology Acceptance Model (TAM)”](image-url)

Source: Davis et al. (1989)
The TAM model has been used also to measure user’s acceptance and perceptions towards campus management system [12], and in predicting internet banking acceptance among young users, specifically ICT professionals [13].

The TAM model has been expanded and modified by other studies. The most important two were the TAM 2 [8] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [9]. Venkatesh and Davis [9] extended the original TAM proposing the TAM2, including in it social influence processes (subjective norm, voluntarism, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use). Attitude toward use was considered a weak predictor of behavioral intention or actual use by TAM2. Another extension of the TAM was the Unified Theory of Acceptance and Use of Technology (UTAUT). This model distinguishes factors that determine use behavior (performance expectancy, effort expectancy, social influence, and facilitating conditions) and factors that mediate them (gender, age, experience, and voluntariness) [9]. The table 1 summarizes the main models described and the respective considered factors that determine user’s acceptance.

<table>
<thead>
<tr>
<th>MODELS</th>
<th>CONSIDERED FACTORS</th>
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<tbody>
<tr>
<td>Theory of Reasoned Action (TRA)</td>
<td>Attitude toward behavior, Subjective norm</td>
</tr>
<tr>
<td>Theory of Planned Behavior (TPB)</td>
<td>Attitude toward behavior, Subjective norm, Perceived behavioral control.</td>
</tr>
<tr>
<td>Technology Acceptance Model (TAM)</td>
<td>External variables, Perceived usefulness, Perceived ease of use, Attitude toward use</td>
</tr>
<tr>
<td>Technology Acceptance Model (TAM2)</td>
<td>Subjective norm, Voluntarism, Image, Job relevance, Output quality, Result demonstrability, Experience, Perceived ease of use, Perceived usefulness.</td>
</tr>
<tr>
<td>Unified Theory of Acceptance and Use of Technology (UTAUT)</td>
<td>Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, Gender, Age, Experience, Voluntariness.</td>
</tr>
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</table>

Some studies considered social influence as a factor in their technology acceptance approaches [14-15], but it was not taken into account by the original TAM. Other studies instead considered the construct of subjective norm as the main representation of social influences [9].

Subjective norm is referred to the perception of a social pressure to engage or not to engage in a behavior [4]. It is defined as “the degree to which an individual perceives that important others believe he or she should use the new system” [9]. Some studies found out subjective norm has a positive direct influence towards behavioral intention to use the technology [16-17-18-19-20-21-22-23-24-25].

The social environment and personal interactions have powerful effects on human behavior. In fact, consumer’s purchasing decisions are always influenced by each other.

In literature three types of reference group influences are identified: Informational Influence, Utilitarian Influence, and Value-Expressive Influence [26-27].

- **The informational Influence** acts when individual would like to improve its knowledge and have better and useful information in order to optimize its choices [28].
- **The Utilitarian Influence** is based on the compliance process and acts when people wish to satisfy group’s expectation in order to achieve a favorable reaction from it [28].
- **The Value-Expressive Influence** is based on the identification process and acts when people wish to be similar to the group in order to belong to it [28].
The three types of reference group influences have an impact on consumers’ intention to use innovation. Starting from this assumption, this paper is going to analyse the way these different kinds of influences act in mobile commerce. Furthermore, the technological, the psychological and the social factors that encourage people to accept mobile commerce will be analysed.

Some existing models consider social influence as one of the factors that enhances the user’s acceptance not a main and starting factor that determines user’s acceptance and they do not consider the model’s circularity and cyclical characteristic. Starting from the most famous models (described in the background section), our model integrates them and develops a dynamic concept of acceptance. It also takes into account the satisfaction level of mobile use introducing the concept of circularity, considering that the same user will in turn influence others to make similar purchases or not, according to their experience. Therefore, this paper introduces a theoretical model based on a cause-effect cyclic relation of social influence for mobile commerce acceptance. It provides a dynamic representation of the mutual influence between use and social influence in the acceptance process.

3. Research methodology

The survey was based on a qualitative methodology. In order to analyse the factors that influence mobile commerce acceptance and their mutual influences, two different integrated methods were performed: In-depth Interviews and Open Space Technology (OST).

The main research objectives of this study were:
- to identify Italian consumers’ beliefs concerning the intention to accept M-commerce,
- to identify a suitable model to be used in determining consumers’ acceptance and willingness to use M-commerce starting from the case of Italy.

The survey has been carried out in two steps: a first step to design the model and a second step to qualitatively validate the designed model.

In the first step, thirty people have been interviewed, (half males and half females). They had different social status, ages and a different education level. A convenience sample has been used. It is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. Although this limits the results’ generalization, however, this method allowed us to go deep in the opinions and the motivations of the respondents on a particular question, without being anchored to a closed answer.

A semi-structured interview grid has been used to analyse:
- the weight of social influence to use a new technology and to shop online;
- the motivations that encourage users using a mobile device for shopping;
- the perceived benefits and risks of using a mobile device for shopping;
- the desired characteristics and functionalities of mobile phones for shopping online;
- the factors that encourage users to influence others using a mobile device for shopping.

The different variables of mobile commerce acceptance, which resulted from the interviews have been therefore submitted to the same interviewed people to understand the way they influence each other.

In the second step, an Open Space Technology involving twenty researchers has been used to validate the first step. Participants were interdisciplinary experts: engineers, economists, sociologists and psychologists. They were selected among the researchers of the National Research Council of Italy, (according to their availability). The OST has been organised on the basis of the interviews outcome. All variables identified by the interviewed people, were shared among the researchers participating to the OST. The issues that have emerged during this meeting, were discussed in order to find shared opinions. The aim of the OST was to evaluate the theoretical model which was built starting from variables and their relations identified from the previous interviews. Starting from the analysis of the two steps, a theoretical model of mobile commerce acceptance has been designed.

4. Results of the study and proposed model

The analysis of the interviews highlighted that the variables which directly or indirectly influence mobile consumers’ acceptance are: social influence, socio-anagraphics, curiosity, image, fashion, usability, usefulness, mobile convenience, cognitive effort, perceived risk and trust, enjoyment, online experience and satisfaction.
Table 2 shows the questions of the interviews administrated to people, organized according to some indicators or conceptual categories (such as external information, motivational, functioning, psychological, experience) and the variables used to classify the different answers given by the interviewed people.

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>INDICATORS</th>
<th>VARIABLES</th>
</tr>
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<tbody>
<tr>
<td>Before shopping on mobile, do you read reviews or social media, look for information, read blogs, forums and ask advice to your target group?</td>
<td>EXTERNAL INFORMATION: Information received by people, reference group, social media (blogs, forums, people reviews).</td>
<td>SOCIAL INFLUENCE</td>
</tr>
<tr>
<td>How important for you are the opinions or the suggestions of your target group or on social media, in your decisions to use mobile phones to make online purchases?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which is your gender?</td>
<td></td>
<td>GENDER</td>
</tr>
<tr>
<td>What is your level of education?</td>
<td></td>
<td>AGE</td>
</tr>
<tr>
<td>What profession do you do?</td>
<td></td>
<td>EDUCATION</td>
</tr>
<tr>
<td>Why do you follow the suggestions of your target group?</td>
<td></td>
<td>PROFESSION</td>
</tr>
<tr>
<td>What are the motivations that encourage you or that motivate you to shop online and in particular on mobile phones?</td>
<td>MOTIVATIONAL: Reasons that drive people to shop online.</td>
<td>CURiosity</td>
</tr>
<tr>
<td>What are the possible advantages of using mobile phones to make online purchases?</td>
<td>FUNCTIONAL: Features and functionalities related to mobile interactions.</td>
<td>USABILITY</td>
</tr>
<tr>
<td>What are the possible sides of using mobile phones to make online purchases?</td>
<td>PSYCHOLOGICAL: Psychological aspects related to mobile interaction.</td>
<td>COGNITIVE EFFECT</td>
</tr>
<tr>
<td>What are the main factors that encourage you in using mobile phones to shop online?</td>
<td>EXPERIENCE: Features of online shopping experience and level of user satisfaction.</td>
<td>PERCEIVED RISK</td>
</tr>
<tr>
<td>How important are the online experience and the degree of satisfaction in the navigation or in the purchase made?</td>
<td></td>
<td>TRUST</td>
</tr>
<tr>
<td>Do you usually suggest to other people to shop the way you did?</td>
<td></td>
<td>ENJOYMENT</td>
</tr>
</tbody>
</table>

In the next section, these variables will be explained by analysing the answers. They will also be used to design a theoretical model for mobile commerce acceptance. Starting from the results of the discussion with the experts during the Open Space Technology, an overview of the theoretical model that they validated, will be given.

5. Analysis of interviews

This section provides a description of the answers provided by the interviewed people classifying them in indicators (macro-areas) and variables introduced in table 2.

- **External information indicator**

  - **Social Influence**

    The interviewed people claimed that usually, before an online purchase, the first thing they do is a comparison of their opinion with other people’s opinion, particularly with their friends or their reference group. They also search for information and suggestions on social media (blogs, forums, reviews of people who did similar purchases). In their opinion, in fact, social influences can have both direct and indirect effects on the purchasing process. Direct effects occur when a direct communication is established between a person and other people concerning a particular decision. Our study found out that social influence is the first diving force which leads to use mobile technologies for different purposes such as shopping. It is evident in the following opinion of one of participants: “Before
making a purchase, I ask to my friends who have done the same purchase and search for information and reviews by other users on the Web. This certainly influences my choice.”

Indirect effects occur when person’s fundamental values and attitudes are influenced by society (such as for example to follow the current fashion, or to read people’s review on Internet). In the last years, specially thanks to social media, consumers do not passively receive marketers’ messages, but they actively express their needs, their preferences and their choices. They can gather information about products and services, interact with other consumers without spatial and temporal constraints and with reduced search costs.

- **Socio-anagraphic indicator**
  - Gender, age, education and profession

  According to the interviewed people, social influence acts on the basis of different socio-anagraphic characteristics of users. People are influenced in their intention of using mobile commerce by other people or media in different ways depending on whether they are young or not, whether they have a high level of education or not, and whether they have a particular experience or not. The variables gender, age, education and profession influence also motivational, functioning and psychological indicators. In fact, different ages, social status, level of education and so on, correspond to different needs, different experiences, different perceptions etc. Young people, for example, are most likely to be influenced to accept mobile commerce due to a fashion driving prevalent behavior.

- **Motivational indicator**

  People are stimulated in doing a purchase by using a new technology (smart phone, i-pad, etc) by different motivations. In particular, the variables curiosity, image and fashion have been identified from interviewed people, as the most relevant reasons of using mobile commerce. The different kind of influence such as Informational Influence, Utilitarian Influence, and Value-Expressive Influence (previously described) impact on these motivations in different ways.

  - **Curiosity**

    The *Informational Influence* affects curiosity. Interviewed people are curious to try things suggested from others and would like to improve their knowledge about it. Examples are the purchase of coupons and/or the booking of trips after other people have said good things about it.

    Curiosity is the inquisitive interest allowing people to learn more about something by exploration, investigation, and observation. It influences human behavior in both a positive and a negative way at all ages. Interviewed people claimed that one of their first motivations to use mobile commerce was curiosity towards new ways to use technologies for different purposes. “Often my friends tell me about their savings in buying on the Web and about the convenience in using mobile devices for these purposes, I started to use it because they stimulated my curiosity”.

    According to interviewed people, curiosity has a positive effect on their intention to use mobile commerce.

  - **Image**

    The *Utilitarian Influence* affects image. Some interviewed people, especially young people, use mobile commerce because they would like to improve their image in order to satisfy group’s expectations [29]. When young people do new things in a new way, for example buying online, using Foursquare etc, by using new technologies such as smart phones and/or tablets, they feel accepted by the group. Some people, in fact, think that their image or social status will be enhanced through innovation [30]. People who use mobile marketing services may feel experienced and socially updated [31].

    According to interviewed people, image has a positive effect on their intention to use mobile commerce.

  - **Fashion**

    Finally, the *Value-Expressive Influence* affects fashion. Interviewed people follow their reference group’s fashion because they need to conform to others in order to be accepted by society.

    Fashion is defined as “a way of behaving that is temporarily adopted by a discernible proportion of members of a social group because that chosen behavior is perceived to be socially appropriate for the time and situation” [32].

    The use of mobile services can be dependent and sensitive to new trends in style and fashion. People use mobile services to make fashion statements concerning people’s style and social identity. For example buying books by using android means belonging to a particular social status. Afterwards, these
mobile services can quickly become obsolete and marketers have to provide timely and up-to-date services [33].

According to interviewed people, fashion has a positive effect on their intention to use mobile commerce.

- **Functioning indicator related to human-mobile interaction**

Advantages, limitations and possible risks highlighted by interviewed are related to interaction with devices. Human mobile interaction is a very important element for mobile use. It is very important to have an intuitive, simple and quick system particularly for commerce purposes. According to interviewed people in fact, the features and the functionalities that mobile phones should have, in order to encourage them to shop by using mobile devices, are related to the concepts of usability, usefulness and mobile convenience.

  - **Usability**

The ISO 9241-11:1998 standard defines usability as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use” (ISO, 1998).

Interviewed people would like mobile devices to satisfy the following characteristics: i) **effectiveness** in order to achieve specific goals with accuracy and completeness; ii) **efficiency** in order to perform tasks with a minimum amount of time or effort; iii) **ease of use and storage** in order to interact with mobile in a simple way without having to start from scratch. Some interviewed people would like that mobile devices have ergonomics characteristics. For example, in the case of contents with a lot of text, the possibility to have a speech function so that contents can be automatically read, to hear it rather than read it.

According to interviewed people, usability has a positive effect on their intention to use mobile commerce.

  - **Usefulness**

Davis (1989) defined Perceived Usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance”. In the context of mobile commerce, usefulness refers to the benefits perceived by consumers in using mobile marketing services more than its alternatives in their daily life. In fact, their main perceived usefulness compared to personal computers is during movement when a personal computer is not available. While traveling, it can be very useful to book a hotel or train/flight tickets. It can also be useful if users have pressing needs and only have their cell phone available. What’s more, its usefulness has been highlighted, for example in the case in which there is an urgency to make a purchase, not to lose a discount because of its approaching deadline or to quickly raise an e-bay auction, before time runs out. Furthermore, some people are more likely to use their cell phone instead of their personal computer. Seniors or people who do not use a pc can make their purchase directly online from their mobile. According to interviewed, usefulness has a positive effect on the intention to use mobile commerce.

  - **Mobile convenience**

The main advantage of using mobile devices, identified by interviewed people, was the characteristic of pervasiveness that enables to have them always at hand and to be connected at any time and in any place.

According to [34], perceived convenience is a level of convenience towards time, place and execution that people perceive when using the wireless network to complete a task. Mobile devices, thanks to their characteristic to be handy, allow to perform a task at any time, enabling people to feel more convenient towards time; to perform a task anywhere, enabling people to feel more convenient towards place; to perform better the execution of a task completion. The main convenience of mobile devices is the rapidity related to the fact that you do not have to go to the store but the store comes to you. Online customers have a wider choice, looking at the different websites, in comparison with going personally to stores. All these characteristics enable people to make more convenient purchases, also in terms of money. Interviewed people find immediate to shop by using mobile devices but they pose their attention on problems which are related to technical questions like:

- having enough RAM to allow a quick operation during the process of buying;
- having enough speed and therefore enough bandwidth to display images;
- having a good stable connection to avoid problems in the purchase after entering the credit card codes;
having a good network cabling throughout the country to avoid paying the connection.

According to interviewed people, mobile convenience characteristics have a positive effect on their intention to use mobile commerce.

- **Psychological indicator related to mobile interaction**

  According to interviewed people, psychological aspects like cognitive effort, trust, perceived risk and enjoyment in using a mobile, also have an important weight on mobile commerce acceptance.

- **Cognitive effort**

  Cognitive effort, refers to the difficulty to use technology. According to [9] more easily the system can be used, the more consumers will accept it. Interviewed people perceived some limitations related to the discomfort of devices such as a small screen and a limited screen resolution, so that contents may be partially displayed. For example, browsing and transactions on mobile are more difficult to do due to its small screen. If users spend much time and effort to access mobile, their self-confidence decreases. In this case the user’s mood can be spoiled and he can stop using services or products. Cognitive effort is also related to the perceived ease of use. It is defined as “the degree to which a person believes that using a particular system would be free of effort” [7]. According to interviewed people, cognitive effort has a negative effect on the intention to use mobile commerce.

- **Trust**

  Trust is a key to mobile commerce success. Lewicki et al. [35], define trust as “an individual’s belief in, and willingness to act on the basis of, the words, actions, and decisions of another”. The need for trust arises from our interdependence with others. We often depend on other people to help us obtain, or at least not to frustrate, the outcomes we value. Customers who trust the company are more likely to visit its “virtual location” and to recommend its products and services to other people. This means that trust increases both technology and mobile acceptance for marketing purposes.

  According to interviewed people, trust could be improved if advertising, for example, was relevant, interactive, non-intrusive, and permission-based. They worry about unauthorized disclosures of customer location data to third parties and unsolicited e-mail and advertising. In order to obtain consumers’ trust, marketers should create a dialogue with the consumer, rather than using the media as a promotional vehicle [36].

  According to interviewed people, trust has a positive effect on their intention to use mobile commerce.

- **Perceived risk**

  Perceived risk is an important determinant of consumers’ acceptance of online transactions. People perceive some risks when making online transactions. For example, they worry about unsafe payments, interception of credit cards, not receiving the paid products, lacking of confidence in websites, illegal activities and fraud. They think that personal computer have more powerful antivirus than mobile devices. The privacy concept is strictly related with perceived risk. In fact, interviewed people, perceive security problems like transparency of personal information that can be diverted wirelessly. Furthermore, users perceive mobiles as being less safe than personal computers because technical issues. For example, the devices are not stable at the connection level compared to a desktop computer. The battery could discharge, impeding you to know if the purchase has been successful. Some people are stressed about the possibility that the device would steal them while they are making a purchase on the road.

  According to interviewed people, the perceived risk has a negative effect on their intention to use mobile commerce.

- **Perceived enjoyment**

  Some people perceive the use of mobile devices as enjoyable also for shopping. Since mobile services can be accessed anywhere and at anytime, several people use them to “kill time” or for fun and pleasure. People who have a good attitude towards technology generally buy games or smart phone’s apps, but also products and services. It is a growing trend and this kind of market is mainly based on users’ enjoyment. People are attracted by innovation and they like to use it to test technologies and to try new ways of doing things in an easier way. A possible risk related to enjoyment is the feeling of not spending money because, by using a credit card, there is a possibility of getting addicted and a risk of getting carried away.

  According to interviewed people, enjoyment has a positive effect on their intention to use mobile commerce.

- **Experience indicator related to the actual use**

- **Level of satisfaction**
An important prerequisite of the success of M-commerce is ensuring that customers’ experience satisfies both their sensory and functional needs via the interface. According to the interviewed people, the user interface features, such as page and content design are key determinants of online purchases. When users search for information and/or conduct transactions, they need an interface which makes their online experience satisfactory. Many of them complain about the limitations caused by a small screen and the necessity of having a good visualization to see the product well and to do make secure transactions. More experienced people, who are used to technology and are passionate about mobile devices are more likely to use them to make purchases. Young people are particularly more inclined than older people to buy on mobile. Depending on their positive or negative online experience and consequently from their level of satisfaction, users will continue or not to buy online and, in turn, they will influence other people to do so.

According to interviewed people, online experience and satisfaction during navigation have a positive effect on the intention to use mobile commerce.

- Social influence in turn

People who usually use new technologies and shop by using their mobile, are also generally very active on social media sites. Mobile devices offer new opportunities to social media, in connection with real-time location-based services, communication on the move and sharing information and services anywhere at any time. Information and Communication Technologies like social networks, blogs, forums, location-based services, networked mobile phone applications allow consumers to influence each other more directly than ever before. Users typically influence brand affinity and purchasing decisions through consumer reviews, for example by updating their own status on Facebook, and Twitter feeds and commenting on blogs and forums. They provide information about the product/services, add “collective content” using discussion forums; they are part of a powerful group that can influence both others consumers and important marketing decisions [36]. It seems evident that consumers really can modify their opinion about products and/or services according to the social influence process.

According to interviewed people, online experience and satisfaction have a positive effect on influencing in turn other people towards consumers’ behavioral intention to use mobile commerce.

6. A Theoretical Model for Mobile Commerce Acceptance

Starting from the analysis of results both of interviews and Open Space Technology, a new model of acceptance, the Mobile Commerce Acceptance Model (M-CAM), has been developed and formalized introducing a holistic view of the process that influences mobile acceptance for shopping purposes.

![Figure 2. The Mobile Commerce Acceptance Model M-CAM](image-url)
M-CAM extends the original TAM by taking into consideration specific characteristics of mobile commerce environments and making explicit the recursive influence of the use of mobile commerce, social influence, socio-anagraphic, motivational, functioning and psychological indicators compared to the intention of use.

In figure 2, the rectangles indicate variables that influence acceptance, while the ovals indicate acceptance in terms of intention to use and actual use. The arrows indicate the influence of a variable on the others and their functional dependences. The variables and their relations have been validated by experts during the OST. The following equation is in fact the result of the OST.

Measuring acceptance in terms of USE at the time \(n\) (\(U_n\)), depends on the INTENTION TO USE (\(iu\)) mobile commerce, which is a function of the SUM of variables, such as MOTIVATIONAL INDICATOR (\(m_i\)), FUNCTIONING INDICATOR (\(f_i\)) and PSYCHOLOGICAL INDICATOR (\(p_i\)) at, the starting time (0) and each time t from 1 to \(n\). These indicators are all functions of the SOCIO-ANAGRAFIC INDICATOR (\(Sa_i\)), that is in turn a function of EXTERNAL INFORMATION INDICATOR (\(ei_t\)). Note that for t from 1 to \(n\), the EXTERNAL INFORMATION INDICATOR is a function of the EXPERIENCE INDICATOR (\(e_i\)) as shown in formula (2) which depends on the USE at the time (\(t-1\)) – not relevant at the starting time as evident in formula (1).

Formulas (1) and (2) formally express dependencies of the M-CAM model described in figure 2.

1) 

\[
U_0 = iu \left( m_0(sa_0(ei_0(x_0))) + f_0(sa_0(ei_0(x_0))) + p_0(sa_0(ei_0(x_0))) \right)
\]

2) 

\[
U_n = iu \left( \sum_{t=1}^{n} \left( m_t(sa_t(ei_t(x_t(x_{t-1})+x_t))) + f_t(sa_t(ei_t(x_t(x_{t-1})+x_t))) + p_t(sa_t(ei_t(x_t(x_{t-1})+x_t))) \right) \right)
\]

\[\text{within } \in \mathbb{N}\]

M-CAM puts social influence at the start of the process of online commerce acceptance. Social influences (by friends, peers, experts, opinions on social media) mainly act on socio-anagraphic indicators that in turn act in different ways on three main indicators: motivational, functioning and psychological. People, in fact, have different motivations, different approaches with devices and different perceptions according to their different ages, social status, level of education, profession etc.

The motivational indicator refers to the motivations of consumers to use mobile commerce by: curiosity, image and fashion, which according to our model (derived from the interviewed people in this study) directly influence the intention to use mobile commerce. The functioning and psychological indicators are related to human interaction with mobiles. Functioning indicator refers to technological functionalities of devices and it is related to variables like usability, usefulness, and mobile convenience. These variables directly influence the intention to use mobile commerce. The psychological indicator refers to the different perceptions of people and it is related to variables like cognitive effort, perceived risk, trust, and enjoyment. These variables also directly influence intention to use mobile commerce. All the described variables included in motivational, functioning and psychological indicators influence each other as well as the intention to use mobile commerce, and its actual use. Finally, actual use produces different experiences and different degrees of satisfaction: if they will be positive, they will be antecedents that will bring users to influence in turn other people. The originality of the model is in its circularity. Social influence acts as an antecedent of mobile commerce acceptance and, after the online experience according to the users’ degree of satisfaction, the process begins again.
7. Conclusions and future works

This paper has analysed both the technological and the psychological and/or social factors that encourage the acceptance of mobile commerce by users. In order to achieve this aim, a qualitative method has been used by carrying out in-depth interviews with thirty people of different age, gender, profession and level of education.

Starting from an analysis of the factors that determine mobile commerce acceptance described in the literature, we have built a semi-structured interview guide. It has investigated on some indicators of acceptance such as: external information received, motivations, functioning and psychological aspects related to mobile interaction and experience during use, in order to give a contribution to existing studies with others possible factors that have emerged from the interviews.

The study found out that the main and first step that moves the intention to use mobile technologies for shopping purposes is social influence. Social influence acts in different ways according to socio-anagraphics characteristics that in turn influence different motivations to use, different interactions with devices and different perceptions.

The main motivations that encourage people to use mobile commerce mainly are: curiosity, image and fashion particularly felt among young people in order to satisfy the group’s expectation and to be accepted by the group. However, several people also mentioned other motivations such as flexibility, freedom and saving of time and money. The others factors that have emerged are related to human mobile interaction and particularly to concepts of usability, usefulness and mobile convenience.

The concept of usability refers to the characteristics of effectiveness in achieving specified goals with accuracy and completeness, efficiency in performing tasks with a minimum amount of time or effort, and with ease of use in interaction with mobile.

The concept of usefulness refers to the benefits that consumers perceive in using mobile commerce more than its alternatives. For example when moving, during travels to book hotel or train/flight tickets, in case of pressing needs.

The concept of mobile convenience refers to the characteristic of pervasiveness of mobile devices and the possibility to connect and to perform tasks anywhere/anytime.

Besides technical aspects influencing acceptance, factors that are related to psychological and sociological aspects like cognitive effort, trust, perceived risk and enjoyment in using mobile have also emerged.

Cognitive effort refers to the difficulty to use technology. For example, small screen, and limited screen resolutions can be the cause of spending much time and effort to access mobile. In this case, the user’s self-confidence decreases and acts negatively on mobile commerce.

Trust refers to confidence from users towards the visited companies and websites for shopping purposes. Customers who trust the company are more likely to visit its Internet page, to buy and to recommend its products and services to other people.

Perceived risk refers to the users’ concerns during online transactions, for example unsafe payments, interception of credit cards, non reception of the paid products, lack of self-confidence of websites, illegal activities and fraud. The concept of privacy is also strictly related with perceived risks. In fact, interviewed people, perceive security problems such as violation of their personal information while using a wireless connection.

Perceived enjoyment refers to the hedonic factor of using mobile. People consider shopping through mobile devices as being useful and playful and fun.

All the described variables affect the intention to use. After the actual use, users, depending on their positive or negative online experience and consequently from the level of satisfaction they get from it in the product and during the navigation, they will continue or not to buy online and, in turn, will influence other people to do so. Nowadays, users typically influence purchasing decisions through consumer reviews, by updating their own status on Facebook for example, and Twitter feeds and commenting on blogs and forums. As the process will then restart again whit social influence, we can therefore say that it works as a circle.

Starting from the results of the interviews on factors that influence consumers’ acceptance, an Open Space Technology has been carried out with experts to validate the variables that have been found out and their relations. The analysis of the results of the two integrated methodologies allowed us to develop a new theoretical model called Mobile Commerce Acceptance Model (M-CAM), introducing a holistic
view of the process that influences acceptance of mobile for shopping purposes. M-CAM extends the original Technology Acceptance Model (TAM) by considering specific characteristics of mobile commerce environments. In this model, social influence is at the start of the process and is the main factor that drives users towards mobile acceptance. The originality of the model stands in its circularity. In this study, we have chosen a qualitative method in order to go deeper and more in detail in motivations and psycho/socio-logical questions that affect the users’ intention to use mobile and their acceptance of it. The study should be considered as exploratory because it focuses on model building rather than testing. Participants were chosen using a convenience sample and involved a limited number of people. This did not enable a generalization of the results, but it has enabled us to design the model. These methodological limitations will be overcome in a second study where the proposed model, built by using people’s opinions, will be empirically tested using the data collected from a survey with a quantitative approach of Italian consumers. The structural equation modeling technique will be used to evaluate the causal model and the confirmatory factor analysis will be performed to examine the reliability and validity of the measurement model.

10. References