Innovation in retail: impact of mobile phone on consumer behavior

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Abstract

"...as consumers adopt new technologies, their behaviors change" (Zinkhan & Watson, 1998). With the rapid development of smartphone and wireless network, consumers use more and more their mobile phones to purchase and/or to reserve products and services. The mobile commerce is becoming a field which cannot be ignored by managers and researchers. However, this topic still remains at his infancy period in the retailing industry. Most papers still concentrate on the technology acceptance model of M-commerce, but few of them pay attention to explore the buying process in M-commerce and the factors which influence it. This paper aims to: (1.) explore the new stages of consumer decision process model of M-commerce for hypermarket chains in France; (2.) extract the factors which could influence consumer decision; (3.) identify the variables for each factor through 20 semi-structured interviews with consumers; (4.) construct a tentative consumer decision model of M-commerce and conclude on the change of consumer behavior. This study reports an exploratory qualitative method by interviewing mobile customers in France.

Keywords: Mobile commerce; Consumer behavior; consumer decision process; Hypermarket Chains in France.

Introduction

Currently there are 6 billion mobile phone users in the world, and 1 billion smart phones, the figure will be DOUBLED in 2015. The mobile phone penetration rates are 236% in Macau of China, 105% in United States and 102% in France. The products and the services offered by mobile phones and wireless network engage the development of M-commerce which is becoming a global subject. 'The development within M-commerce is subject to two major technological advances; the growth surge of smartphones and instant high speed mobile internet access' (ZHANG et al, 2013). In France, the possession of smartphones is 55% and the number will grow constantly in the next few years, as this rate has already reached 69% in USA and 74% in England. The most impressive phenomena is that M-commerce represent 3.7 billion euros in 2014 and it will increase to 7 billion by 2015 which represent 12% of the whole e-commerce (Source: Centre for Retail Research).

Mobile commerce is a new service in the background of the development of information technology innovation. Service output in Europe and developed countries accounted for more than 70% of GDP, and it will be enhance in the future. This caused the interest of a large number of scholars and companies, to carry out deepening research on the M-service. One of the most prominent participants is IBM who proposed the concept of SSME (Service Science Management and Engineering). They hope to develop the technologies needed in service industry by combining the cloud computing science; marketing; industrial engineering; business strategy; science of management; social and cognitive research; science of law and so on.

In Europe, the speed of development of traditional retail industry has slowed down from recent years; the value of sales and the profit have descended constantly. Facing to this huge context change, the hypermarket chains are modifying their strategies by introducing M-commerce to consumers. 'To safeguard their existence in the face of harsh competition, food retailers are shifting their attention from goods to service. In this development, M-services have emerged as suitable venues for intensifying companies' service orientation' (Saarijärvi, et al. 2014). This drives more and more researchers to focus on the change of consumer behavior, 'Although a large volume of literature is available on mobile commerce, the topic is still under development and offers potential opportunities for further research and applications' (Ngaia & Gunasekaran, 2007). The core study of consumer behavior is consumer decision, and the decision is influenced by different factors which are alternative and uncertain. That's why this paper tries to explore the different stages of consumer decision process of M-commerce.

Consumer decision is influenced by different factors which are alternative attributes in terms of value and uncertainties (Bettman, Johnson, Payne, 1991). Even there exist some papers on M-commerce adoption, but the factors of consumer decision are rarely discussed before. There are some factors which can extracted from the Consumer decision process of M-commerce such as: User experience quality; usefulness; trust; satisfaction; consumer feature.

1. Conceptual Framework

In this paper we focus on the retail industry, because traditional retailers are increasingly shifting their strategic focus from goods to service (Saarijärvi, Mitronen & Yrjölä, 2014). As we said, the new daily routine of shopping is coming to us, consumers' comportments and purchasing decisions are now revolutionary changed thanks to the penetration of smartphone. Consumers don't need to go shopping anymore; they are doing it all the time at all the places. They can find and reserve the products or services in many contexts even when they are busy, they can give orders via their smartphones. This revolution has given consumers the opportunity to bring challenges for retailers to find the new model to meet new customers' behavior. In the industry of retailing, they began to realize the situation and tiring to introduce M-service for new consumer decision process.

1.1.   Mobile service in hypermarket chains

The huge potential in delivering M-services through mobile devices created by the combination of rapidly developing technology and high uptake rates of mobile devices has been recognized for more than a decade (Bitner et al., 2000). M-services are understood here as mechanisms through which food retailers can enable their strategic shift toward serving their customers (Saarijärvi, 2012). As the application of new technology, m -commerce and his innovative services have a lot of features. The research of key factors for high-quality mobile services with excellent perceived value for customer, technology platform for mobile services, service model, service delivery methods, as well as the changes of consumers' behavior, make us understand better the value of mobile commerce.

Varley & Rafiq proposed in (2005) that retail services is customer service, including a variety of additional value-added services through interaction offered by sales staff, the implementation of commercial policy and the facilities provided by retailers. The initial service innovation, mainly through the introduction of advanced technology and equipment, such as fast cash system and convenient bag storage systems, but consumers' demand changes to the spiritual level, the service began to consider the innovation of diversification for the various departments.

Thus, this paper tries to analyze the services offered by the retailers in France via mobile phones. Mobile commerce includes not only products but also good quality services offered by the retailers, such as the precise information, the products' scanning function, the reservation ubiquity, after-sell service and the social share experience, etc. In some cases, mobile services are even more useful to attract and keep consumers than products.

Consequently, M-services become more and more important for retailers by providing the personalized shopping experiences to their consumers with the persist information (Nysveen et al., 2005). Current research specific to the retailing industry, shows that consumers who own a smartphone perceive social media and other applications provided by the retailer as valuable in the in-store environment (Sands et al., 2009). In retail industry, there are two kinds of mobile apps for the use context. One of them is developed by independent application developers like 'Shop kick', it was designed by an independent company who offer the service for the retailers like Best Buy, Macys, American eagle, etc. They use the LBS (Location Based System), the coupon which could get from 'kickbucks', scanning function to make consumers purchase easier and funnier. Amazon has the same application which focuses more on price compare function.

Another kind of apps was developed by retailers themselves. Like Walmart developed his own apps and it could switch to 'in store model' automatically when customers enter into one Walmart store, and they will receive the information on new products or promotions, they could reserve the products if they are sold out. In France, retailers developed also their own apps because they caught the tendency of retail's future. We made a list of these apps with their functions as in table 1.

Functions / Retailers		Auchan	Casino	Carrefour	DIA	Monoprix	Leclerc	Lidl	Walmart
Information service	Catalogue	○	○	○	○	○	○	○	○
	Promotion	○	○	○	○	○	○	○	○
	Scanning	○	○	○		○			○
LBS	My store	○	○	○	○	○		○	○
	Accurate search in store			○		○			○
Personal Assistant	List of shopping	○		○		○			○
	Member card management	○	○	○		○			○
	Contact with seller	○		○		○	○		○
Payment			○	○	○		○			○
Social media			○		○				○	○

Table 1: List of mobile service in retailers' apps

We can observe through the list that information service is the most basic function for the retailers and nearly all the retailers add it in their apps. Consumers could receive the catalogue and promotion information via their smartphones. They can also scan the product for price and further information. In the function of LBS, my store is used by most of retailers to help their customers to find the nearest store easily. Accurate search in store allow consumers to find their target products quickly. For personal assistant function, management of member card and list of shopping help consumers to shop more comfortably, they don't need to carry the papers and lot of member cards with them. Some retailers also add the function of contact with seller in their apps, this is obviously very important for them to make interaction with consumers in the online environment. In this point, social media has the same function of contact with seller. Payment is also the most basic function to make purchase easier but it still needs to develop, as in China, consumers could pay their products by scanning a two-dimension code in 2 seconds. This is really under developed in France even in Europe.

1.2.   Consumer decision process Model

With the raise of M-service in retail industry, is there a change of consumer decision process? This question seems very interesting for author. There are two angles to observe consumers' behavior. The narrow sense refers to purchasing and consumption of materials; the broad sense adds consumer decision process as an important action. Consumers' behavior in a traditional commerce environment influenced by consumers' internal characteristics (including personalized preferences, interests and emotions) and external environment (including social, cultural, marketing activities, etc.). 'The mental, emotional and physical activities that people engage in when selecting, purchasing, using and disposing of products and services so as to satisfy needs and desires' (Wilkie, 1994, p. 14). But this behavior is totally different from a mobile commerce environment. So, we are going to present and compare the consumers' behaviors in traditional commerce, e-commerce and M-commerce environment.

Consumers Decision Process in Traditional commerce

There exist a lot of theories and models of consumers' behavior in traditional commerce environment such as the Habit Formation theory, Information Processing theory, Risk Reduction theory and Marginal theory which can explain the consumers' buying behavior. The most popular consumer decision process model is EBM (Blackwell-Engel-Miniard) Model, 1995/2001/2006. This model based on EKB model describes more in detail the consumer buying behavior. It becomes the most popular model to analyze consumer buying behavior. In the latest version of this model in 2006, it proposed 7 stages: Need recognition, Search for information, Pre-purchase evaluation of alternatives, purchase, consumption, Post-purchase evaluation and divestment.

This model could be used to explain the relationship between the variables during purchase process. Although the processes of purchasing decision are various according to the product, the price and the consumers' abilities. But generally, the managers could follow the laws of consumer behavior to make the strategy: AIDMA, use the advertisement to attract the Attention and Interest, transform them to the Desire and keep the Memory in their brain, then make the Action of purchase.

Consumers Decision Process in E-commerce

In E-commerce environment, consumers' behavior becomes more personalized. As e-commerce has no limitation of time and location, the choices of products were greatly expanded. Consumers of E-commerce generally have a high education level and a high income level, so they can choose the merchandise with their personal character. Thus, consumers enjoy more and more their experience of purchasing online. Without the limitation of time and location, they can search, compare, share and purchase the products freely. But they also have the problems facing the massive information from Internet, they don't know what course to take because the information from Internet is asymmetrical, so consumers cannot analyze effectively the selected products, many consumers purchase the goods by feelings and this increase the possibility of a non-rational choice.

In E-commerce environment, consumer could get the information through the search engine, online community, social platforms and other ways to share information and experiences. Consumers' behavior has a lot of changes compared to the traditional environment, consumer behavior generally followed AISAS mode. Consumers are attracted by a good idea or because of a need, they pay Attention to certain products or services, interaction make consumers became interested in participating, then the consumers go back to the Internet to

Search for relevant information or information provided by users. They will take the Action after obtaining sufficient information, and sent the experience back to the internet to Share with friends. This makes a complete new consumers' behavior in e-commerce environment. Sahar Karimi (2013) proposed six stages such as: need/want recognition, formulation of decision problem, search and decision making (research, evaluate and choose), appraise, purchase and post-purchase behavior. The factors that influenced the process were also proposed like: Internet market characteristics, knowledge of product and decision making style.

Consumers Decision Process in M-commerce

Consumers' comportments and purchasing decisions are now revolutionary changed thanks to the penetration of smartphone. Consumers no longer need to go shopping since they are doing it at all time and all places. They can find and reserve the products or services at many contexts even when they are busy, they can make orders by smartphones through purchase process. This revolution has given consumers the right to speak and brings the challenges for retailers to find the new model to meet new customers' behavior.

Mobile consumers are very different from traditional or e-commerce consumers. Consumers no longer need to stay in the shop to make their choice or to seek in front of computer, they can make decision by walking, by taking the bus or while watching TV. And then, with the LBS system, consumers could find the nearest shops and find the products they need by clicking their mobile phone. In addition, M-commerce is highly customized for different customers; it can offer product or specific services for each consumer.

Due to Internet access continuing costs reduction, the popularity of smartphone, consumers changed their life habits, drive mobile commerce development rapidly. Consumers' behavior in M-commerce is mainly characterized by the following features:

- Anytime, anywhere. Compared to traditional E-commerce, M-commerce Environment is more casual and relaxing. Consumers can purchase at anytime and anywhere constantly. As long as the mobile is in their hands, consumers can browse, compare, order via mobile phone.

- More personalized. Since mobile phones are more personal than computers, each mobile device demonstrates their owner's personality. With the big data, bar codes, two dimensional codes, graphics and voice search and other human-computer interaction technologies, M-commerce allows consumers to find the target products quicker and more accurately. If e-commerce looks like a huge sea, then M-commerce is like the navigator for consumers.

- More integrity. As the sim card of mobile phone number with user information can determine a user's identity, there is a credit certification basis, so the mobile phone users will pay more attention to their reputation, potentially encouraging them become more honest.

- Fragmented. Because mobile phone can be carried easily, consumers use it on the way to work, in bus station or metro, in bed, even at toilet. They could use these fragmented times to make the quick research, compare, fast purchase, social recommendation, reservation and other activities.

- Interactive. Since the transmission of information between mobile devices is one to one, so M-commerce consumers' behavior shows more interactive features.

- More sensitive with price. Because M-commerce is more adapted for fragmented times which is limited by speed and price of Internet, so consumers in this case are difficult to make decisions on expensive items, which determine price be very sensitive for them.

Although there are some differences between e-commerce and M-commerce, but the essential of Internet is the same, they all have more or less the same stages as need, research, evaluation choose and purchase. But the process of these stages is quite different and more speedily. In M-commerce, consumers received information without limit of time and location, but the time to digest them is much fewer. Need recognition, Information management and evaluation combined the first cycle. Need is no longer the first step of the process, it could be brought by the information management or the evaluation. Evaluation is also more frequent than in e-commerce, consumers could compare and choose at any moment after received the information. The purchase stage will be divided into two options as: online purchasing and instore purchasing. And, it could be brought directly by the Information management because the consumers don't put a lot of time on Evaluation. After or even in the middle of Purchasing, consumer could go back to the Information stage. This is the second cycle in the model. Consumers could share their Feedback information after purchasing activities, and then the information will go back to the stage of Information management which brings the third cycle of the model. In order to distinguish the different kind of products, we add Consumption into the model. Sometimes, consumers give feedback after the consumption of products. So, we propose the consumer decision process model as shown in Fig. 1.
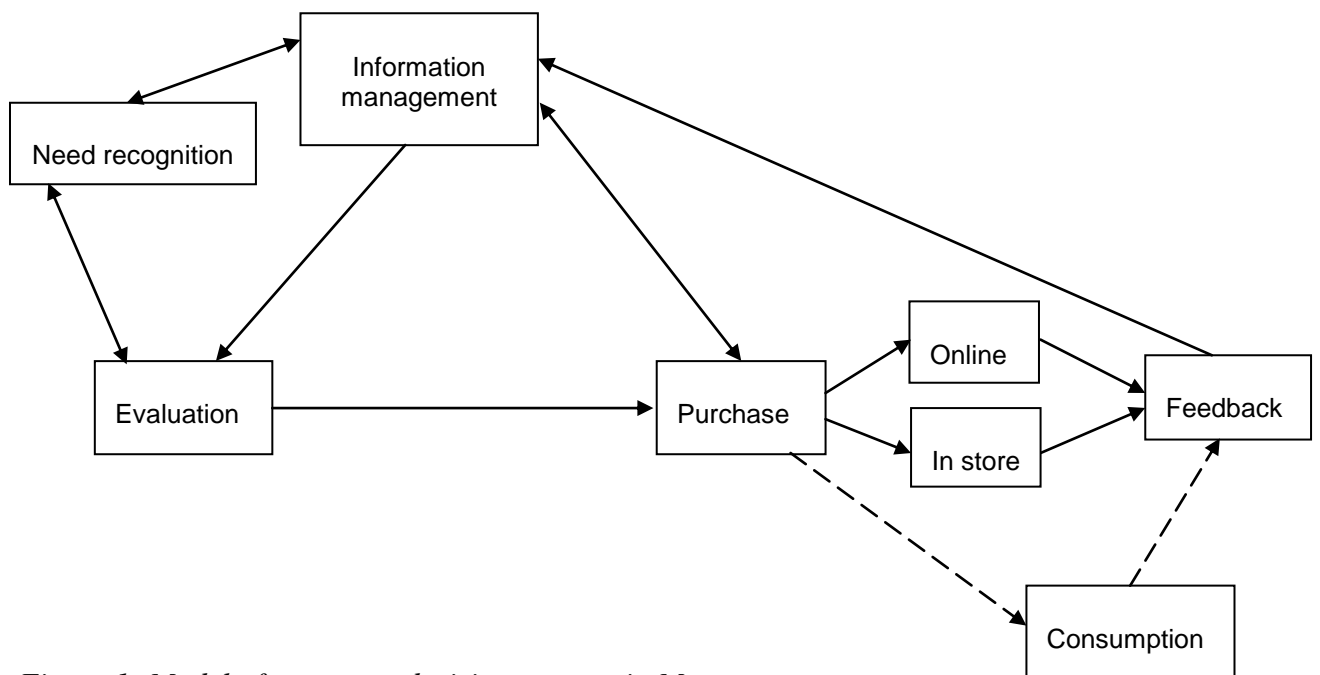

Figure 1: Model of consumer decision process in M-commerce

1.4 Influential factors of consumer decision process

M-commerce environment has same factors that influence consumers' behaviors in the traditional commerce environment, including the internal factors like motivation, feelings, attitudes, etc. It also contains the extrinsic factors such as social class, family status. The factors of e-commerce environment are also similar, such as personal characteristics, trading environment, online merchants conduct and Website, etc. But according to different features in M-commerce, the factors that influence consumers' behavior are more complex and more

diverse. Above are some main findings from researchers in the past decade; we will make a list as shown in Table. 2.

Thong, Hong & Tam (2006) discussed the effect of the perceived usefulness, perceived ease of use, perceived entertainment, users' experience difference, customer satisfaction which could influence the continuing use with a sample of mobile Internet users. An empirical study confirms that the perceived usefulness, perceived ease of use, perceived entertainment have a direct impact to the continuing use: customer satisfaction also plays an intermediary role to the continuing use. The experience difference also influence the continuing use through the perceived usefulness, perceived ease of use, perceived entertaining and user satisfaction.

Cheong & Park (2005) made a model on the basic of technology acceptance model theory which indicates that the perceived usefulness, perceived entertainment, perceived price level are the important factors of M-commerce. Wu & Yang (2005), Bouwman, Carlsson, Molina-Castillo et al. (2007) have the similar results.

Through these previously researches, we note there are too many variables in mobile commerce, it needs a more synoptically and more accurate model. Secondly, most of them are for consumer's technology acceptance and few factors that influence the consumer decision process were proposed in these studies, which leave the author an opportunity to extract the factors as shown in Fig. 2. Consumers of M-commerce are more characteristic because of personalized service, and most of purchase activities take place in fragmented time, different types of consumers would have quite different behavior. Usefulness and experience quality are also two factors very important through the whole process. Consumers always look for a better service with low price which could adapt to their life rhythm. Confidence will strongly influence consumers' choice because the apps need their personal information for a better service.
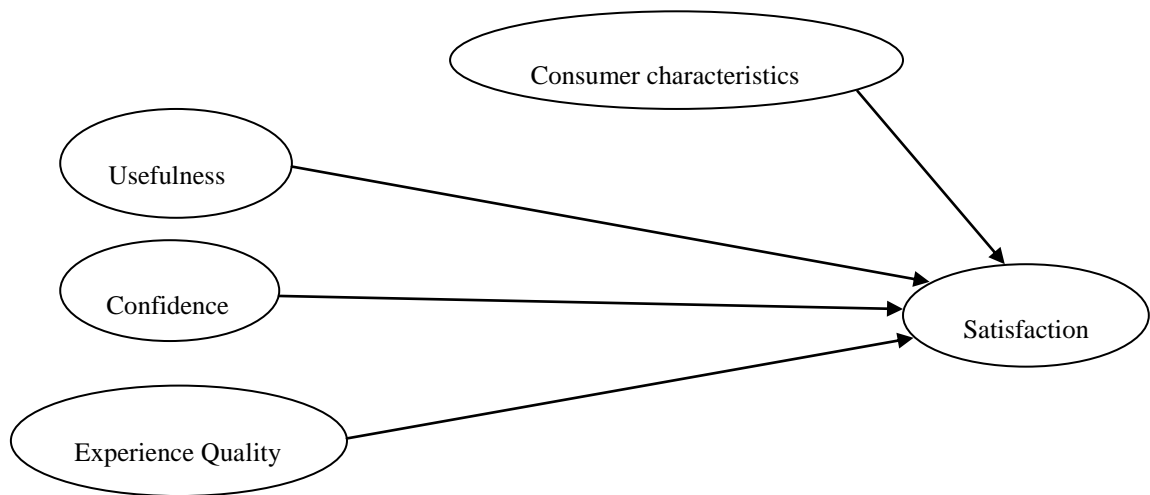

Figure 2: Factors Model in M-commerce

Authors	Factors
Vreehopoulos, Constantiou, Sideris et al. (2003)	Security, terminal equipment, custom support, low price
Knutsen (2004)	Efforts expectations, perceived usefulness, attitude
Anderson (2004)	Efforts expectations, desired effect, convenience, social impact
Cheong & Park (2005)	Perceived usefulness, perceived entertainment, perceived price level
Kenneth C.C.Yang (2005)	Consumer innovativeness, past adoption behavior, technology cluster adoption, age, gender
Wu & Wang (2005)	Users perceived risk, cost, compatibility, perceived usefulness
Jen-Her Wu (2005)	Users perceived risk, cost, compatibility, perceived usefulness, perceived ease of use, use intention, actual use
Thong, Hong & Tam (2006)	Perceived usefulness, perceived ease of use, perceived entertainment, users' experience difference, customer satisfaction
Bouwman, Carlsson, Molina-Castillo et al. (2007)	The factors varied by different M-commerce users
Mahatanankoon (2007)	Individual creativity, perceived entertainment, excitement exited level
Mort & Drennan (2007)	Perceived usefulness, compatibility, perceived risk, perceived cost, attitude
Song et al. (2007)	Perceived entertainment, reputation
Bhatti(2007)	Subjective norm, personal innovativeness, perceived usefulness, perceived ease of use, intention
Khalifa & Shen (2008)	Perceived usage of self-presentation, Perceived usage for deep profiling, Perceived usage virtual Co-presence, cognitive social presence, affective social presence, awareness
Al-Gahtani & Said S. (2011)	Trust, perceived risk, security
Wang & al. (2012)	Cognitive credibility
Thakur & Srivastava (2012)	Perceived usefulness, perceived ease of use, trust, mobile user satisfaction
Yang (2012)	Perceived usefulness, perceived entertainment
Malik et al. (2013)	Perceived usefulness, perceived ease of use, Perceived financial risk, Consumer innovativeness, self-efficacy, product involvement

Table 2: List of influential factors of consumer behavior in M-commerce

2. Research Methodology

In this section, the paper attempts to identify the variables for each factor mentioned before, through 20 semi-structured interviews with consumers. The interviews were focused on the retailing context: they offered a global and dynamic business environment to address the emerging research phenomenon and provided the access required to generate the interesting and diverse illustrations of M-services from which a tentative framework could be suggested (Saarijärvi, Mitronen & Yrjölä, 2014).

2.1 Respondents

To achieve the objective of this paper a set of personal semi-structured interviews with 20 people were conducted in France with European, Asian users. The reason to choose the different nationalities is to find out the influence from different culture backgrounds. In Asia, with the highly speed growth of possession of mobile devices and the improvement of the website quality, the mobile consumption will take 50% of on line purchasing in 2015; which the number is already 45% in Japan and Korea. And the percent conversion is too times larger than United States. According to the data from Alibaba in China, the mobile consumption represents already more than 50% in retail industry which has increased 133% from 2014.

The respondents were selected by different backgrounds such as age, sex, work, family role, etc. And the interviews were carried on in varying situations i.e. in front of the supermarket, fast food store, train or bus station, university, office, and at home to distinct the different contexts of using mobile phone. Participants were ranging from 19 to 56 years old and were business professions, students, academicians, restaurants. Irrespective of the interviewee's gender, majority of the participants had a good knowledge of the mobile commerce and are buying frequently via their mobile phones.

2.2 Interview procedures and analysis

The interviews process was devised in two stages. First, we asked the interviewees when and where they use the mobile phone and what kind of function was most useful for them, have they already purchased with their mobile phones and in what kind of products they were most interested in. Have they already used the apps of retailers? To capture the entire use context, they were asked to describe:

- One situation where they use the mobile apps of retailers;

- The reason they use it and what experience they got from that situation;

- Which M-service they feel the most useful?

- What are the advantages and the defects of mobile apps?

Second, we asked them the level of interaction in each stage of their purchase, the objective is to find out the factors of interaction at each stage of consumer decision process in M-commerce. In this part, the interviewees were asked to describe:

- The stage of their purchasing and what interaction they made;

- How do they feel about these interactions for their shopping experience?

- How do they feel about the change of their purchasing activities?

3. Result and discussions

The analysis was made to construct the consumer decision model of M-commerce and conclude on the change of consumer behavior. The framework is comprised by four dimensions: Consumers characteristic, usefulness, experience quality and confidence.

3.1 Consumers characteristic

Firstly, Consumers characteristic describes the factors influenced customers' intention of using M-services, including age; family situation; salary; culture; mobility and consumer innovativeness. There are six interviewees above 30 years old, we consider this age as a boundary for age. Five of them use their smartphones to purchase and three of them use retailers' apps. Normally, the older person use less M-service but other variables play also important role. Like family situation, single person has less intention to use M-service:

Informant 1: Male, European. "I don't use regularly apps of supermarkets because I don't need to buy a lot of products. Normally, I buy something I need after work. But I think I will use it after I have a family."

Informant 2: Female, Asian. "It's very useful for me because I have a baby and I need to buy a lot of things for him, diaper; food; clothe and so on. That's why I started to search the price with my mobile."

Culture back ground is also very important, there are nine Asians and eleven Europeans, and Asians use more M-service than Europeans because they have habit to use smartphones when they were in Asia.

Informant 10: Female, Asian. "I think Chinese people are more open for new stuff and the local government encourages the M-commerce from years, but I really think the French people don't like to try something new, it's the spirit of Europe."

Mobility is also a variable that influence consumers' attitude, they prefer to go to store if they have cars:

Informant 10: Female, European. "It's also a transport problem, I don't mind to drive my car to Carrefour and I enjoy it, it's nice to gut out for a while."

Innovativeness appeared also after the interviews:

Informant 5: Male, Asian. "I'm open for new technology and concept, nothing is better than this.

Informant 19: Female, European. "No, I am not interested every time they said a new business mode, I prefer the traditional way. I can go to store and talk to sellers."

3.2 Usefulness

Secondly, usefulness is factor that combined by context and cost as variables. It helps consumers to estimate or evaluate the value of certain apps. If consumers consider one M-service is useful to save time or money and adapt their life habit, then they will feel satisfied.

Use context

People carry their smart phones or mobile devices (as iPad, etc.) to anywhere they go at any time. Following the data from Compete web site, 63.2% of shopping activities took place at home, 34.5% consumers use their mobile devices in store to compare the price, watch the comments or download the coupon, and 28.6 of them purchased in their fragmented time such as the bus station, coffee shop and so on. They could search for information, enjoy the entertainment applications, communicate with others, and purchase or reserve the products/services without the limit. All of these new concepts or technologies are becoming a very important part of our daily routine, which means the new context of commerce activities are also coming into our life. The context, especially with regard to mobile applications, is seen as an important variable, and due to the possibility of developing context-aware or location-based services in the mobile domain, the concept of context has received more and more attention (Bouwman & Wijngaert, 2002).

Then, if mobile services are to come up with real added value to the users' experience, developers have to understand both the concept of mobility, as well as the context of the use of mobile applications (Bouwman, Bejar & Nikou, 2012). First of all, we have to understand which factors compose the context. To better understand the impact of context on consumers' behavior, particularly in terms of technology-based services, researchers have called for more research on contextual factors (Dabholkar & Bagozzi, 2002). To better understand the contextual factors, the service use outcome in the model of the service production process was discussed, because the relationships between the context and the service use outcomes is important (Chell, 2004). Following the previous research, context can be divided to Computing context, user context, physical context (Schilit, Adams & Want, 1994) and time context (Chen & Kotz, 2000). Computing context refers the basic technologies of mobile commerce such as the Wi-Fi access, the communication costs and so on. User context means normally the social situation of consumers. Physical context refers to the environment condition including the temperature, the traffic condition. Time context refers to e.g. day, week, or month (Chen & Kotz, 2000). Some services clearly fit some context while other services do not. It is therefore important to categorize services quite carefully, and to relate them to contextual aspects (Bouwman, Bejar & Nikou, 2012).

Through the interviews with participants, the role of context appears to be a critical part of their purchasing experience. They described the time, the location and the Internet condition are very important for them to use the M-service instead of other channels.

Time

For the first factor 'time', it was considered as the key to open the door of M-service, because it allowed consumers to benefit better their fragmented time.

Informant 7: Male, Asian. "I'm so glad to use my smartphone when I have a little time between work and other activities. For example, I could watch the products and promotion information when I go to the toilet or when I take a little rest between my work times. This is

really useful for me to notice and capture the new products because I don't have enough time to go to store every day. I used to be bored when I go to the toilet, but now I feel I could stay there for the whole afternoon."

Informant 12: Female, European. "I just finished my study life at the university and I have a part time job in a restaurant, so I have a lot of time now. As I don't have a vehicle to go shopping, so I spend a lot of time on mobile apps. I can spend whole day to compare the price and put it in my purchase list, it's kind of fun."

Informant 5: Male, Asian. "I just like to reserve my tickets or hotels via my iPhone, it's very easy to use and I can do it anytime I want. So, I feel a lot of liberation with it. I even order my pizza with my phone; I don't want to go to store with too many other customers on the waiting line."

So, we could see there are three kinds of time factors like fragmented time, abundant time and intended time. They all have different rhythm of life, but they all choose to spend their time with M-service to make it more useful.

Location

The second factor of use context was 'location', as we mentioned before, consumers could use M-service at anytime and anywhere. It makes these two factors inseparable, for example, consumers could use LBS to get the quick information when they are in an unfamiliar location.

Informant 9: Male, European. "It was my first time in China for a business conference, I was in airport and I have to go to the meeting room in three hours. But I lost my laser pen which is very important for my presentation, so I used my phone to find a store not too far from the building where I should go, that is really helpful."

Informant 3: Female, Asian. "I take the shuttle to go to work every time I have to fly. When I wait the shuttle at the station and wait my plane at the airport, I prefer to search the local information where I will fly to. "

As a result, we considered the location has two aspects: location conversant and location unconversant.

Internet condition

Internet of mobile access and fixed device access are very different. The mobile Internet access is slower, the signal is weak at some location, the security problems and the cost of internet is expansive. This factor truly influenced the consumers' purchasing decision.

Informant 7: Male, Asian. "Well, it's different to connect to Internet at the train from the toilet. I usually take a book when I take the train or a plane because I can't get the Wi-Fi, if I have it everywhere, I will never finish one book in my life."

Informant 11: Male, Asian. "I think it's very important for me if I can connect to internet or not, sometime there is no connection and I don't know what to do."

Informant 13: Female, Asian. "This is a really problem if Wi-Fi is bad and I feel panic when it happened."

Informant 2: Male, European. "Yes, I think it's really important because we all need to use internet every day. I want to search some information with my mobile."

Cost

Cost includes all costs when consumers face are purchasing, such as price, acquisition costs, transportation, installation, ordering, and maintenance or repair costs. In new technology acceptance study, a large number of scholars consider the cost as an important factor that affects consumer's attitude. The study considers that cost must be taken into account when consumers choose M-service.

Informant 11: Male, Asian. "The promotion they sent me is very interesting because they seem to know what I'm looking for. For example, I need to buy a print machine two weeks ago which I searched it a lot for the best price. And then the Carrefour sent me a list of printers with promotion, I was so happy and surprised that I found it this way."

Informant 2: Male, European. "The price is maybe the most important for me to use M-commerce. I found one pair of shoes which I really like and very expansive in store, so I decided to search it with my mobile, I found the same thing with a very attractive price and I made the order very quickly."

Informant 6: Female, Asian. "I don't have a car to go for shopping, it's not very convenient to take bus to Carrefour every time. So I prefer to search and reserve products with my mobile and go get it. That saves me a lot of time."

Informant 7: Male, Asian. "Of cause price is very important but I don't like to receive too many information every day, it makes me unconfutable."

3.3 Experience quality

This factor includes interaction, ease of use and confidence.

Interaction between customers and retailers

Because of the intangible and uncertainty of services, many scholars doubt the reality of service innovation, they think the service is an adjunct of tangible product and service innovation itself does not exist. In addition, the relations between service innovation and technological innovation were discussed: do they have the same process, nature, mechanisms and effects? Currently, the debate over whether the presence of innovative services to generally agree: innovation in services exist, but the form is very different with technical and organization innovation. It exists almost no services without tangible elements, at the same time, there is little tangible goods don't include the services (Christopher H. Lovelock, 2001).

Retailers need to make the service innovation activity and strategy; they must first clear the basic driving forces of innovation in services. Sundbo & Gallouj (1998) analyzed the services with a number of European countries and they proposed a model of the driving forces. We can see that customers are one part of actors, following Gummerus & Pihlström (2011, pp. 521–522), M-services can be defined as 'content and transaction services that are accessed and/or delivered via a mobile handheld device (PDA, mobile, cellular or phone, GPS, etc.)

based on the interaction/transaction between an organization and a customer'. So, in M-commerce environment, customers participate in the production of service more frequently than before, research on customer participation and their influence to the production and delivery process of service gradually increased (Bendapudi and Leone, 2003; Ennew and Binks, 1999; Hsieh and Yen 2005; McCollough et al, 2000; Yen et al., 2004). Consequently, M-services become more and more important for retailers to provide a personalized shopping experience to their consumers (Nysveen et al., 2005).

Service production process and manufacturing process are very similar. Therefore, the principle of the management of manufacturing operations with some management experience can be used to manage service processes. However, due to the characteristics of the service, management and operations of services have a different process. Customers could get satisfied by the quality of the relationship with service person, and to determine the quality of service. Through M-services the company can create the interactions with its customers, engage with their value- creating processes and deliver additional resources for their use (Grönroos, 2008a; Grönroos and Ravald, 2011).

The purpose of M-service is to find customers current and future needs, then design the programs to meet the customer's needs, including mobile services, service delivery methods and experts support. Then try to provide the faster, more comprehensive services to customers with an unprecedented shopping experience. The company is able to interact with customers via a variety of M-services that assist customers in their everyday processes beyond the traditional boundaries of food stores (Klabjan and Pei, 2011).

Consumers search and analyze the information they found or promoted from the retailers. Before they go to the store, they usually search the product index and price at their spare time. Retailers must pay attention at this stage to keep them loyal by analyzing consumers' habit.

Informant 8: Female, European. "Every time I went to a forum, I see people recommend the baby diaper from Auchan. So I use my iPhone to download the Auchan apps and they even have a forum named 'Auchan Baby', I found a lot of articles interesting and I still have some questions in my mind, so I went to the store to ask the sellers there, they were really nice with me. I was so touched and I decided to purchase all I need for my baby in Auchan."

Informant 6: Female, Asian. "I think because I wrote barbecue meat in my shopping list, when I was driving to the Carrefour, they sent me the message that they are having the promotion for the barbecue sauce. I mean this is interesting because I just forgot to write the sauce in my list."

Informant 2: Male, European. "They have Wi-Fi in Carrefour and the speed is not bad, so I really enjoy the shopping with my wife there."

Retailers could interact with them by offering more information.

Informant 14: Female, European. "I need to prepare a dinner for my friends and I had no idea in my mind, so I went to Carrefour with no list at all. I planned to buy the first thing I saw in the food region. But, when I picked up one box of chicken and scan it, there is a recipe of curry chicken which came out. And they even marked the position of every ingredients I need, so I made my shopping quickly and went back home to prepare the dinner."

Informant 13: Female, Asian. "I'd like to take the pictures of what I bought and share it with my friends. I can put it on Facebook, twitter and Instagram."

Informant10: Female, Asian. "Every time I see my friends share some nice food, I want to go buy it immediately. Maybe I'm so greedy."

Ease of use

It refers to the potential users, that the ease of use of a particular system. Consumers do not require special personal effort in order to achieve the desired effect. Receiving performance play a very good predictor. With the technology of LBS, retailers could send the accurate information or highly related information to their customers. Or they can also send the store location to them for the convenience.

Informant 15: Male, European. "…We were in this small town and we don't know where we could find the store, so Nicolas used his phone to find a Casino which is 10 minutes from us. We were so happy because otherwise we will have nothing to eat for that night."

The in-store function of Walmart is very interesting as an M-service, it switches automatically when consumers enter into the store, and they could locate the consumer's position and told them where to go for the right product.

Informant 10: Female, Asian. "It's useful to use the store model because I could find what I want quickly. And I can use my phone to scan the product for more information when I find it. Like a bottle of wine, I can't find the price and I scan it with my phone, the price came up."

So, the personal assistant in store will help consumers to make their decision easier, and they could interact with the retailers for more information.

Informant 1: Male, European. "Payment is easier than before, I don't have to bring my wallet every time I go to shopping. I could pay with my smartphone. But I worried about the security problem at the same time, if they steal my phone, I can do nothing then."

Informant 14: Female, European. "It's very useful to keep the member card in my phone. I hate when I have to take three or four member card with me, they take a lot of place. Now I can just scan it in my phone."

Confidence

Consumers can not perceive its results for any purchase and they all have fear of uncertainty. Therefore, the consumer decision-making implies a dose of uncertainty. Consumer in M-commerce environment will consider economic risks, functional risks, and personal privacy risk.

Informant 19: Female, European. "I don't trust mobile commerce because I have to put all my personal information in it, if they use it in other purpose…"

Informant 2: Male, European. "I'm a little bit worried about my privacy in this context, I don't know if my personal information is well secured or not. But everything has risk, like visa card. We have to pay attention to protect it by ourselves."

Informant 11: Male, Asian. "Mobile screen is too small so I can't compare different products with it, and I don't want to take my IPad every day because I live in Marseille, it's very risky to do that."

Informant 5: Male, Asian. "Mobile screen is also an inconvenient point for me, can't use it as a computer. Sometimes, I need to compare products but it's not very easy to do it with my mobile. …….For security problem, I think it is ok because IPhone is much better than android system. I'm not worried."

3.4   Conceptual Model and conclusion

Following the discussions we mentioned above, we can construct the consumer decision model of M-commerce. See at Fig. 3 below.
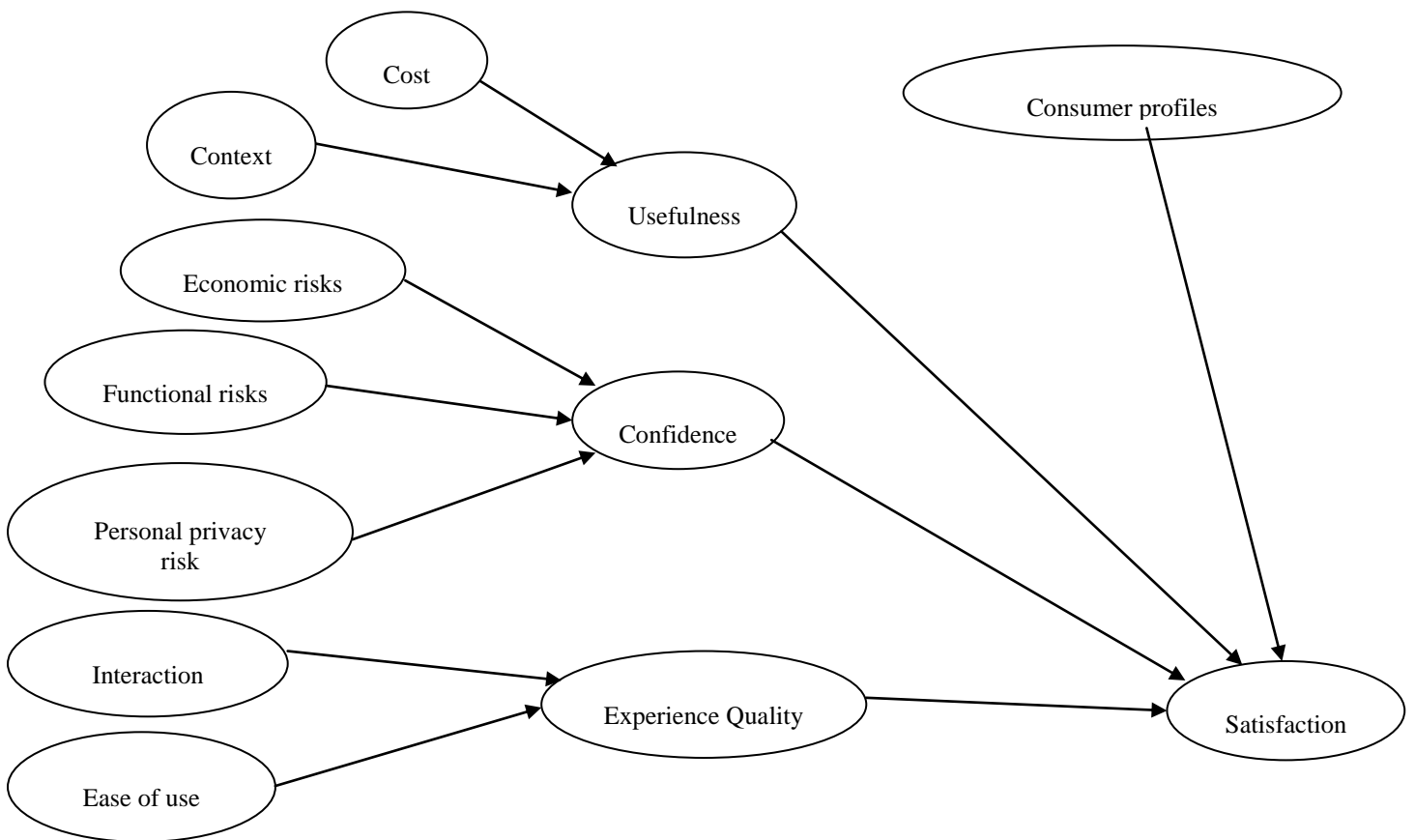

Figure 3: Factors Model in M-commerce

3.4.1 Theoretical implications

This paper is one of the first studies to focus on the new stages of consumer decision process model of M-commerce for hypermarket chains in France. Author tried to propose a new consumer decision process model and the factors that influence consumer satisfaction. This gives a new point of view in this recent field.

It discovers the three key elements of use context of retail industry, and the factors of these elements were discussed to help us understand the important role of use context. In addition,

the interaction of each stage of purchase in M-commerce was discussed to understand the importance of consumers' participation. Especially in retail industry, consumers have more and more interaction with retailers. The factors we proposed in this paper are rarely mentioned in the previous studies.

3.4.2 Managerial implications

Retail industry is facing the increasing competition from E-commerce, retailers are looking to M-service as an innovative way to adapt changing behavior of their customers and make them satisfied. This study proposed new factors which could influence consumers' behavior: managers could use them to design the M-service easier to use.

3.4.3 Limitations and future research

The research on context and interaction are really rare in past, so we can't find enough back theory to support our model. Most of papers focus on the acceptance of M-commerce, but not the factors influence the consumers' behavior. Especially, this study focuses on the retail industry which is also new for the concept. The number of participants for the interview is also low.

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Annexe

- **Description of respondents**

Respondents	Name	Sex	Nationality	Age	Profession
Infomant 1	Kevin	Male	Frenche	23	Waiter
Infomant 2	Nicolas	Male	Frenche	29	Manager
Infomant 3	Lilin	Female	Chinese	26	Air hostess
Infomant 4	Lingwei	Female	Chinese	33	Student
Infomant 5	Binsai	Male	Chinese	25	Student
Infomant 6	Wensi	Female	Chinese	29	Manager
Infomant 7	Huimin	Male	Chinese	25	Seller
Infomant 8	Ting	Female	Chinese	38	Entrepreneur
Infomant 9	Alex	Male	Frenche	56	Business man
Infomant 10	Yuan	Female	Chinese	30	Student
Infomant 11	Hua	Male	Chinese	32	Jobless
Infomant 12	Morgan	Female	Frenche	23	Dishwasher
Infomant 13	Shan	Female	Chinese	26	Student
Infomant 14	Lucy	Female	Frenche	29	Designer
Infomant 15	Fabien	Male	Frenche	27	Part time job
Infomant 16	Kean	Male	Frenche	20	Student
Infomant 17	Temma	Female	Frenche	19	Student
Infomant 18	Lissa	Female	Frenche	20	Student
Infomant 19	Yoko	Female	Frenche	40	Tai Chi teacher
Infomant 20	Emmen	Female	Frenche	40	Part time job