Antecedents of Customer Satisfaction in Mobile Commerce: A systematic literature review

Azin Taha, David Hassan Jahed
Faculty of Computing, Faculty of Built Environment
Universiti Teknologi Malaysia
Skudai , Johor , Malaysia
azin.taha@yahoo.com
davidjahed@live.com

Mohammad Nazir Ahmad, Nor Hidayati Zakaria
Faculty of Computing
Universiti Teknologi Malaysia
Skudai , Johor , Malaysia
mnazir@utm.my
hidayati@utm.my

Abstract—These days, issues such as customer satisfaction, attentiveness to customers' requirements and the ability to reply to them in near real-time have become serious competitive driving factors. While customer satisfaction regarding most goods and services has been well explored in academic literature, there exists little research on this factor with respect to mobile commerce applications and services. This paper provides a systematic literature review of the available research into antecedents of satisfaction in mobile commerce from 2005 to 2012. The outcomes are far from unanimous and the differences suggest that the satisfaction antecedents in mobile services are dependent on the nature of their services, their target clients and their operations. Based on the 15 extracted studies, we found a total of 12 antecedent factors existing for customer satisfaction in mobile commerce. We classified them into 3 main categories of American customer satisfaction index model antecedent factors and then 4 sub categories of Content Quality, Customer Service, Content Reliability and Distributive Justice respectively. This paper calls for more systematic attention to be directed towards customer satisfaction in mobile commerce and suggests to IT practitioners, as well as the research community, a summary of feasibly relevant factors that may affect customer satisfaction in mobile commerce services.

Keywords-mobile commerce; m-commerce, mobile application; antecedents; customer saisfaction; systematic review

I. INTRODUCTION

During the last two decades, the marketing community has observed an alteration from transaction-based marketing strategies to an emphasis on creating interactive relationships between the company and its customers (1). One of the latest tools developed to expand individual services to customers is mobile technology. Because of the rapid developments in mobile technologies, it has recently become a remarkable tool in marketing strategies, and accordingly, it will need to be further extended to match this new channel (2). Among the variety of mobile services, considerable attention has been devoted to mobile web-based application services. In particular, mobile devices have been shown to be very personal devices which may provide firms with unrivalled possibilities to build and maintain one-to-one relationships with their customers; combined with a large reach, low cost, rapid feedback, constant accessibility and localization possibilities.

The success of a mobile commerce approach relies greatly on user satisfaction, including evaluation of the service content in relation to any additional charges involved in using it. Although in the past consumers have felt cautious about using mobile technologies (3), in the future, mobile apps are expected to have an important impact on customer acquisition and retention, by offering additional services and benefits to customers (4).

Experts and scholars offer various kinds of definitions for customer satisfaction from different perspectives, among which the more authoritative definition is from a marketing expert, Kolt, in 2001, who said that customer satisfaction was a kind of pleasant or disappointed status formed after customers compared perceived the actual result of products with the expected one. When the perceived result is lower than the anticipated one, a feeling of dissatisfaction arises, or customers are not satisfied. The earliest customer satisfaction index model is the Swedish customer satisfaction barometer (which can be abbreviated as SCSB) founded in 1989 by Professor Fornell, who worked in the Quality Research Center of the University of Michigan Business School. Later, national customer satisfaction index models were built up one after another in some 20 countries, including Germany, USA, Japan, Korea etc. Among these, the most authoritative one is the American customer satisfaction index model (abbreviated as ACSIM) founded in 1994. At present, the customer satisfaction index models in most countries are based on ACSIM according to the native situation.

Many researchers have deliberated on significant features regarding customer satisfaction and loyalty in the former e-commerce, which is now called e-satisfaction and e-loyalty (5). Although m-commerce has entered everyday life, customer satisfaction in m-commerce (m-satisfaction) has rarely been considered because of its relatively short history (5). As a starting stage of m-commerce, most studies paid attention to the customer‘s reasons for accepting m-commerce, rather than customer satisfaction (5). Customer satisfaction is different from customer acceptance in the way that customer acceptance guides customers to use m-Internet or m-commerce; and then customer satisfaction is subsequently achieved.

This article commences specifically with an evaluation of different determinants or antecedents of customer satisfaction in mobile commerce and concludes with an elaboration of points for further studies in mobile satisfaction. The premise being that gaining more knowledge about mobile satisfaction strategies will lead to the better understanding of successful applications in the mobile commerce area. As a basis, we discuss the main aspects of the design of the literature review in Section II, including the extracted data and the analysis of

the results; conclusions and an outline of future work are discussed in Section III.

II. SYSTEMATIC LITERATURE REVIEW

This study has undertaken a systematic literature review based on the original guidelines as proposed by Kitchenham (6). It is based on six sections which are presented here as follows: Section A states the scope of this research; Section B presents the research questions that guide the systematic literature review; Section C provides the planning of the search process; Section D details the inclusion and exclusion criteria; Section E shows the data collected from the selected studies; and finally, section F demonstrates the data analysis.

A. Scope

The overall objective of the paper has been stated in Section I, but its scope requires further refinement if it is to be precisely defined. The following points identify the precise boundaries of this review and the scope:

- Focus on B2C marketing literature (as compared with B2B, organizational and work environments).
- Focus on literature studies concerning customer satisfaction through the m-commerce enterprise and system layer (as compared with other branches of the literature such as m-commerce infrastructure, m-commerce business models, m-commerce adoption, etc.).
- Focus on general overview of m-commerce services and applications, leaving aside issues such as type of service (e.g. shopping, banking, entertainment, ticketing), type and brand of mobile device, and related market or provider.

B. Research Questions

The research question that we intend to answer in this Systematic Literature Review (SLR) is, specifically: What value can be drawn from different literature studies with regard to antecedents of customer satisfaction from mobile commerce satisfaction models?

C. Search Process

Once the research question is defined, a search string can then be inferred from it. In order to form a search string, all keywords are extracted from questions, their synonyms are then defined then using Boolean operator; following this, (AND, OR, NOT) search strings will be constructed. Once the search string is defined, relevant research will be obtained from an electronic database. In order to obtain better results, various electronic databases are recommended. The researcher examined published English-language articles on mobile commerce customer satisfaction models available on the web (via digital libraries and databases), published between 2005 and 2012. Only papers which were published in journals and conference proceedings were selected for this research. The following sources have been selected to perform SLR:

- IEEEXplore Digital Library (http://ieeexplore.ieee.org)
- ACM Digital Library (portal.acm.org)
- ScienceDirect (www.sciencedirect.com)
- Emerald (www.emeraldinsight.com)
- Wiley InterScience (www.interscience.wiley.com)

All of the above mentioned sources have search engines based on keywords. The search string is defined as follows: ((“mobile commerce” OR “m-commerce” OR “mobile application” OR “mobile web application” OR “mobile app”) AND (“antecedents” OR “factors” OR “model” OR “framework” OR “specification” OR requirement”) AND (“customer satisfaction” OR “user satisfaction” OR “m-satisfaction”)).

D. Inclusion and Exclusion Criteria

A tentative application of the search string has shown that, in many cases, it is sufficient simply to read the title of the contributions to consider them as candidates for selection in the SLR, since the terms of the query are commonly used in literature, and lead to many papers which are not related to the subject of this SLR. When the title is not sufficient to determine the inclusion of the paper as a candidate, the abstract is then read and, if necessary, the introduction and even the whole paper. Papers were excluded on the basis of their publication date (before 2005) and publication place (journals and conferences only) for the following reasons: (1) in order to provide the latest techniques which could be adapted to the current mobile commerce system; and (2) the main journals and conferences of computer science community were sought, in particular those concerning commuters and human behavior subjects. Duplicate papers of the same study are also excluded in the SLR. In addition, this SLR should concentrate on antecedents of satisfaction in mobile web-based services, leaving aside consequences and outcomes.

E. Data Extraction

The initial search run in January 2013 returned 357 papers in total. The number of papers found per source is summarized in TABLE I, together with those marked as candidates and those finally selected. Identical studies in different sources have been eliminated. The search string was formulated by using words in common usage and, after applying the inclusion criteria, most of the studies found were not labeled as candidate studies. After applying the exclusion criteria to the candidate studies, we identified 15 studies related to literature review as described in the previous sections.

TABLE I. NUMBER OF STUDIES IN SELECTED SOURCES.

Source	Studies Found	Candidate Studies	Selected Studies
IEEE Digital Library	199	9	9
ACM Digital Library	62	1	0
ScienceDirct	35	8	5
Emerald	31	1	1
Wiley Interscience	30	1	0
Total	357	20	**15**

F. Analysis of the Results

We identified 15 papers which cover this SLR-related research question and highlighted 12 frequently-cited antecedents to customer satisfaction in mobile commerce.

The review exposes different and sometimes reversing results on customer satisfaction antecedents. For example, a study argues that appearance and design of the mobile application interface influences user satisfaction, while a subsequent review draws absolutely opposite conclusions. On the other hand, some of the studies shared similar views, such as service quality and perceived value as being the most significant factors. Thus, the development of mobile satisfaction can be influenced by the degree to which a person believes that the mobile services will give him/her products or services of good quality and whether it would be beneficial to order them (Perceived Quality). It is also influenced by what degree he/ she perceived level of paid or possible expenses to be when using mobile commerce services/applications (perceived value).

Through the results analysis, there exist a few numbers of index models for customer satisfaction with a trend to the specialization of a specific domain in mobile commerce. We identified that most of those models are concentrated around the ACSI Model, indicating this framework as being one of the most relevant sources for the development of customer satisfaction drivers in mobile commerce. Structural Equation Modeling and Factor Analysis are also two main analytical techniques which are used to test research structural relationships of the research models.

We sought to categorize antecedent factors into meaningful clusters based on the ACSI model. Therefore, we went through our source of systematic review, as well as customer satisfaction literature in different disciplines such as management and psychology and looked for an appropriate category for each set of factors. In brief, there are 3 main categories, consisting of:

1) Customer Expectation:
   - Customer overall expectation of the quality of m-commerce services
   - Expectation of the extent to which m-commerce meets customer personal requirements
   - Customer expectation of the reliability of m-commerce services
2) Perceived Quality:
   - Customer overall evaluation of the quality of m-commerce services
   - Evaluation of the extent to which m-commerce services meets customer personal requirements
   - Customer evaluation of the reliability of m commerce services
3) Perceived Value:
   - Evaluation of the quality of m-commerce services if given the prices customer pay
   - Evaluation of the price of m-commerce services if given the quality customer receive

In the next level, in order to make more sense of the factors, the researchers sought to create 4 sub-categories, including: Content Quality, Customer Service, Content Reliability and Distributive Justice. TABLE III shows the final taxonomy for the cited sub- categories; their related antecedents and sample items.

A validation test was undertaken based on the proportional reduction in loss (PRL) reliability indicator introduced by Rust and Cooil (1994). PRL is used to assess the consensus between judges who are invited to code a number of elements into exclusive qualitative categories. Based on Ghapanchi and Aurum, 2011; Three judges (n = 3) were chosen for this test, all are academics knowledgeable in the field. The judges were given an instruction sheet including a description of the 12 antecedents as well as an answer sheet onto which they were asked to map antecedents against the sub-categories. TABLE III shows the way in which antecedents were assigned by the judges to the sub categories and how the proportion of inter-judge agreements was calculated for each of them.

A minimum value of 0.7 for PRL indicator demonstrates an acceptable reliability (22). Inter-judge agreement was measured by dividing the total pair-wise agreements by the total pair-wise decisions. Looking at TABLE II, an overall number of 36 pair-wise agreements was achieved out of all 36 (12×3 =36) possibilities, reaching 100 percent agreement of all three judges.

TABLE II. INTER-JUDGE AGREEMENT FOR THE SUB CATEGORIES

Antecedent	Judges			Consensus	1 & 2 agree?	1 & 3 agree?	2 & 3 agree?	Agreements	Total
	1	*2*	*3*						
1	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
2	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
3	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
4	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
5	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
6	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
7	CQ	CQ	CQ	CQ	Yes	Yes	Yes	3	3
8	CS	CS	CS	CS	Yes	Yes	Yes	3	3
9	CR	CR	CR	CR	Yes	Yes	Yes	3	3
10	CR	CR	CR	CR	Yes	Yes	Yes	3	3
11	CR	CR	CR	CR	Yes	Yes	Yes	3	3
12	PV	PV	PV	PV	Yes	Yes	Yes	3	3
Total								36	36

TABLE III. TAXNOMY FOR ANTECEDENTS OF CUSTOMER SATISFACTION IN MOBILE COMMERCE

ACSI	ACSM		Sample Item	Reference
Customer Expectation and Perceived Quality	**Content Quality**	Appearance	• The mobile app uses colors properly • The mobile app uses fonts properly • The mobile app is user-friendly	(14),(8),(9), (15)
		Entertainment	• The mobile app provides enjoyable experience • The mobile app makes it enjoy with friends • The mobile app makes it willing to spend time	(11)
		Reciprocity	• The mobile app hosts many share information • The mobile app causes many discussion on system • The mobile app provides collaboration	(11),(8),(9)
		Mobility	• The mobile app enables finding location • The mobile app provides information navigation • The mobile app presents instant information	(11),(8),(16)
		Usability	• The content of the mobile app is useful • The content of the mobile app is current • The mobile app provides adequate facilities for searching products/services • The content of the mobile app is accurate	(10),(14), (8),(9),(15), (16)
		Convenience	• The mobile app makes it easy for users to find the content they need • The mobile app provide easy to understand information • The mobile app provide convenient and easy to use menu	(10),(14),(8), (9),(15),(16)
		Accessibility	• The mobile app has valid links (hyperlinks) • The mobile app is always up and available • This mobile app system can instantly react to the data user inputs • Error seldom occurs to mobile app system • Mobile app links load fast	(10),(14),(8), (9),(15),(16)
	Customer Service	customization/ interaction	• It is easy for mobile app users to communicate with the provider • The mobile app provide quick response to users requests • There is content specification recommended for users • There are various ways to submit inquiries • Response time to inquiries about content and services is rapid • Answers about inquires is useful and solves problems	(11),(10),(9), (16)
	Content Reliability	Security	• The payment system is secured • The mobile app looks secured for carrying out transactions	(13),(15),(7), (8), (9),(10), (11),(16)
		Trust	• The mobile app provides stable operations • The mobile app is trustworthy	
		Privacy	• The privacy protection of the mobile app is guaranteed	
Perceived Value	**Distributive Justice**		• Users get what they deserved after using the mobile app • The consumption of the mobile app results in a very positive outcome for the users • Compared with the inputs of using mobile app services, users are satisfied with what they receive • The outcome that user receives is fair • Using the mobile app services is worth for user to sacrifice some time and efforts • User feel getting good mobile app services for a reasonable price	(12),(13)

III. *CONCLUSIONS AND FUTURE WORK*

The results of this paper will be helpful not only for academics and researchers engaged in the study of mobile commerce, but also for those who are involved in the design, management and implementation of infrastructures for mobile commerce services. We believe the more one knows about antecedents of mobile satisfaction, the better he can come up with trustful applications for mobile transactions.

Differences in outcomes suggest that the satisfaction drivers in mobile services are dependent on the nature of their services, their target clients and their operations. These differences in results suggest promising further research interests. Through results analysis, there exist a few numbers of index models for customer satisfaction with a trend to the specialization of a specific domain in mobile commerce.

In addition, only a few numbers of studies cited in this paper suggest detailed executive strategies and a comprehensive model in predicting the issues that play a role in development of mobile users' satisfaction. These operational strategies are not enough for the operators specialized in m-commerce.

Our recommendations for future studies are supported by a review of different literature studies concerning mobile satisfaction in various contexts. We can argue that it is very useful to apply a more complete framework in empirical efforts designed for exploring mobile satisfaction development that seeks to integrate all kinds of factors, namely: sociological (e.g., fame, third-party certification), personality-based (e.g., experience with m-transactions and m-Internet), socio-psychological (different influential aspects of m-satisfaction regarding different contexts), technical (e.g., service quality) , and socio-cultural (e.g., culture, education). This shows that m-satisfaction in the mentioned areas is on its inception level and more factors are needed to be investigated. Follow-up questions like 'how do various cultures affect the satisfaction level of mobile users' and 'what are the strategic planning factors recommended for the operators specializing in m-commerce' can be rational facilitators for future studies in different mobile transactions on satisfaction issues.

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