

# Business and Technological Perspectives About Mobile Commerce

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## ABSTRACT

*This paper presents a research in process about the privacy and security issues regarding m-commerce (mobile commerce). In this research, privacy issues are viewed as the business perspectives and security issues are viewed as the technological perspectives. M-commerce is an alternative way for customers to be reached. The questions are: is customer privacy acceptable in the m-commerce environment? and is security (reliability and trustfulness of the mobile systems) acceptable in the m-commerce environment? A pilot study was conducted to University students to observe their opinion regarding those questions. The intention of this research is to conduct a formal survey that present possible strategic solutions to improve m-commerce environment. Findings from the pilot study suggests that students would like to be informed about the lowest prices of their favorite products and services and that actual stability of the system is acceptable.*

## 1. INTRODUCTION

About 1.7 billion people in the world own a mobile telephone (Momo, 2005). This is approximately how big mobile commerce market can become. M-commerce (mobile commerce) is an extended branch of electronic commerce, indeed users interact in wireless environment, in which time and space issues are overcome (Coursaris, Hassanein, Head, 2003).

## 2. LITERATURE

M-commerce is an extended branch of electronic commerce (Coursaris, Hassanein, Head, 2003). Its user interaction is done wireless. This atmosphere provides information about time and space to facilitate the location of potential customers. Privacy and security in the wireless environment are still main issues since technology is continuously improving. Business and technological aspects of m-commerce are analyzed.

### 2.1 M-Commerce from the Business Side

The business perspective provides an inside about the utility and profitability of m-commerce. Gilbert and Kendall (2003) present that many users of mobile devices carry it wherever they go and are more careful about its incoming stream of calls and text messages. Definitely, this new channel to reach customers closely represents an opportunity of great value to businesses.

Strader, Tarasewich, and Nickerson (2004) emphasize on the relationship between quality of service perceived by customers and the quality of service that was really delivered by service providers in the m-commerce environment. Another issue that they mention that have an impact on the business standpoint is the experience and compatibility among different mobile devices technologies.

New business models need to be developed for the proper m-commerce integration in the market. Gjerde, Venturin, and Stordahl (2005) highlight that the new strategy should take into account the fact that time and content (location, terminal capabilities, personal preferences) are factors known by the provider for the focus of the business campaign.

### 2.2 M-Commerce from the Technical Side

M-commerce depends on its technical support. Zheng, Chan and Ngai (2006) point out that data should adapt in the highly dynamic wireless environment called adaptive system. An adaptive system consists of presenting real images and text in the m-commerce device by location, awareness or transparency,

dynamic reconfiguration, compositions, mechanism, and description. They use a Java platform to promote maximum interoperability across the systems. Even though their system is highly efficient, scalability, security and heterogeneity are important areas to explore.

A centralized database model is proposed by Hu and Meng, B. (2005). Their system uses a database for saving computing time when the mobile equipment is watched and controlled at anytime/anywhere environment. This database is controlled by authorized personnel. This system is like an adaptive system that uses a centralized database. They state that this system is a viable and effective way of saving computing time.

Kato, Yamamoto, Hirota, and Mizuyama (2006) present a Linux based mobile phone to approach some issues in the m-commerce system. Those issues are memory size, stability, boot time/response time, real time, and power consumption of the mobile device. However, Linux has more processing overhead than what a mobile phone requires. They explain that additional technical innovations should address the configuration of memory size, the stability, which ensures security, and the boot time (to reduce the startup time).

### 2.3 Summary

Given the current technological advances in m-commerce, business can take advantage of this opportunity by providing the perfect market campaign according to when and where potential customers are. However, customers' invasion of privacy can be adversely affected. Future research would be relevant in the area of privacy and security awareness in the m-commerce environment.

## 3. THEORETICAL FRAMEWORK

### 3.1 Research Design

The survey for the pilot study was conducted at the University of Puerto Rico in Aguadilla, and the sample consisted of students taking information systems courses with Dr. Sanchez. Forty-three pilot study surveys were completed. Students were chosen for the study because most of them own a mobile phone, they are typically more receptive to innovations (considering m-commerce as an innovation), and they were the most accessible sample.

### 3.2 Limitations

There are limitations to the reliability and validity of the data collection instrument and study design common to cross-sectional studies (Bourque & Fielder, 2003). Since the selection of the sample was not randomly selected, the external validity of this study was affected. The survey for the pilot study was not randomly selected for a target population of 200 students registered in information systems courses in the Department of Business Administration. The sample selected was convenience sample of only 43 students. Therefore, generalization of the findings of this study to the target population should be made with caution.

## 4. IMPORTANCE OF THE STUDY

This study is relevant to the emerging mobile commerce market, which offers a new media to reach for customers. The intention of this study is to present possible strategic solutions to improve m-commerce environment. This particular paper presents the results of pilot study survey that is expected to contribute to the enhancement of the real study that will eventually be conducted.

## 5. RESEARCH FINDINGS OF THE PILOT STUDY

Forty-three pilot study surveys were completed by students, with no missing values. Those were analyzed in order to develop an improved survey instrument for the real study. According to the pilot study findings, a new survey instrument will be developed. The Statistical Package for the Social Sciences, version 11.0 was used to conduct all data analysis.

### 5.1 Descriptive Statistics

The variables that have the lowest standard deviation (with less than .73) are “Lowest prices about favorite products and services” and “Feel well if receive unsolicited services no matter the location”.

The variables that have the highest standard deviation (with more than .97) are “Carry a mobile phone everyday” and “Customer privacy is accepted”.

### 5.2 Regression

Multiple regression was used to predict customer privacy and security issues regarding m-commerce.

### HYPOTHESIS 1

Null Hypothesis: The linear combination of independent variables (“Nearest favorite business location”, “Promotions based on time and location”, “Lowest prices about favorite products and services”, “Feel well if companies know where you are”, “Feel well if receive unsolicited services at a specific moment”, “Feel well if receive unsolicited services at a specific location”, “Feel well if receive unsolicited services no matter the location”) does not predict the variation in the dependent variable (“Customer privacy accepted”).

Alternative Hypothesis: The linear combination of independent variables (mentioned in the null hypothesis) does predict the variation in the dependent variable (“Customer privacy accepted”).

Table 1 shows that the most important predictor in the model is “Lowest prices about favorite products and services” with  $\beta = .388$  ( $t = 2.065$ ,  $p = .046$ ).

The ANOVA for the regression model using the stepwise method,  $F(7, 35) = 1.43$ ,  $p < .225$ , suggests that the linear combination of variables does not explain a significant amount of variation in the dependent variable “Customer privacy is accepted”. Therefore, the null hypothesis is accepted. This is maybe due to the sample size.

### HYPOTHESIS 2

Null Hypothesis: The linear combination of independent variables (“Stability or good reception of the system is accepted”, “Power consumption or battery life is accepted”) does not predict the variation in the dependent variable (“Security issues are accepted”).

Alternative Hypothesis: The linear combination of independent variables (mentioned in the null hypothesis) does predict the variation in the dependent variable (“Security issues are accepted”).

Table 2 shows that the most important predictor in the model is “Stability or good reception is accepted” with  $\beta = .301$  ( $t = 1.839$ ,  $p = .073$ ).

The ANOVA for the regression model using the stepwise method,  $F(2, 40) = 4.735$ ,  $p < .014$ , suggests that the linear combination of variables does not explain a significant amount of variation in the dependent variable “Security issues are accepted”. Therefore, the null hypothesis is accepted. This is maybe due to the sample size.

Table 1

Model		Standardized Coefficients Beta	t	Sig.
1	(Constant)		2.953	.006
	Nearest favorite business location	-.065	-.409	.685
	Promotions based on time and location	-.090	-.489	.628
	Lowest prices about favorite products and services	.388	2.065	.046
	Feel well if companies know where you are	.094	.588	.560
	Feel well if receive unsolicited services at a specific moment	-.302	-1.423	.164
	Feel well if receive unsolicited services at a specific location	.083	.361	.720
	Feel well if receive unsolicited services no matter the location	-.058	-.271	.788

a. Dependent Variable: Customer privacy is accepted

Table 2

Model		Standardized Coefficients Beta	t	Sig.
1	(Constant)		3.488	.001
	Stability issue (good reception) is accepted	.301	1.839	.073
	Power consumption (battery life) is accepted	.202	1.237	.223

a. Dependent Variable: Security issues are accepted

## 6. DISCUSSION OF FINDINGS OF THE PILOT STUDY

Results show that “Lowest prices about favorite products and services” and “Feel well if receive unsolicited services no matter the location” are strong variables. This means that most students were in agreement with those items. Although, none of these variables refer to the m-commerce scenario in which the customer can be reached according to the time and location.

Next, “Carry a mobile phone everyday” and “Customer privacy is accepted” are weak variables since variation in the answers were very high ranging from strongly disagree to strongly agree.

In addition, “Lowest prices about favorite products and services” was the only variable that try to predict better the dependent variable “Customer privacy is accepted” for hypothesis 1. However, “Lowest prices about favorite products and services” is not a variable clearly related to the m-commerce environment.

Lastly, “Stability or good reception is accepted” was the variable that tries to predict better the dependent variable “Security issues are accepted”. May be technological issues are not affecting students in the m-commerce environment.

## 7. CONCLUSIONS

This research in process presents a pilot study that is relevant to improve a complete study about m-commerce and its customer perceptions regarding privacy and security issues. The intention of this research is to conduct a formal survey that present possible strategic solutions to improve m-commerce environment. The lessons learned from this pilot study to apply to future research are very relevant. First, some questions in the survey should be rephrased to emphasize on the m-commerce perspective. Second, more questions concerning security (technical) issues to should be added. More literature review in this area is needed, as well. Third, improvement in the selection and size of the sample is important. This study can provide important implications to m-commerce, if the factors arise from the pilot study are taken into consideration.

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