

Environmental Factors Affecting Mobile Commerce Adoption- An Exploratory Study on the Telecommunication Firms in Jordan

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Abstract

Around the world, mobile commerce (m-commerce) is being rapidly adopted as the latest trend to do business. This study aims to explore the environmental factors affecting m-commerce adoption by telecommunication firms in Jordan. A framework was developed based on the literature review, consisting of nine factors that are used to examine their effect on the m-commerce adoption level. The quantitative approach is adopted in this study using a survey conducted among managers in three telecommunication firms in Jordan: Zain, Umniah, and Orange. With a response rate of 60%, 102 questionnaires were collected and analyzed using SPSS. The results of the analysis revealed the important factors that significantly affect m-commerce adoption in Jordan. These include competitive pressure, regulatory environment, social influence, support industries, customer pressure, and government pressure, respectively. The analysis revealed that starting initiatives from telecommunication firms expect to lead the market toward m-commerce services and simultaneously enhance customer readiness and investments in m-commerce supportive industries. In addition, suitable tax laws, clear regulatory frameworks, and improving the infrastructure by the government are considered essential issues that affect m-commerce adoption directly.

Keywords: Environmental factors, Mobile commerce, Telecommunication, E-commerce, Jordan

1. Background

It is obvious that the Internet has and will continue to change the way we live by creating new ways for citizens to communicate, congregate, and share information of a social nature. As a result of this substantial development in information and communication technology (ICT), a new technology emerged, which is known as m-commerce (Sadeh, 2002; Aghaunor, 2006). Clarke (2001) defined m-commerce as “providing products and services using wireless technologies to facilitate electronic business activities without constraints of time and place” or “having the ability to purchase products anywhere through a device which enable wireless internet”. Terziyan (2002) defined it as “a business transaction with an economic value, conducted using a mobile terminal, allowing communication through telecommunication or a personal area network with an electronic commerce infrastructure”.

The main objectives behind the adoption of m-commerce would be the financial benefits that a company expects to get as a result of using this technology while maintaining the competitive advantage (Daniel, 1998). A lot of companies in developed countries have become aware of the importance of m-commerce and the demand of mobility, which means that the customers, partners, and employees should be able to access information resources and services at any time and from anywhere (Steendern, 2002, cited in Snowden, 2006). As companies always try to improve themselves by creating better products and services for their customers, m-commerce continuously grows and becomes a more integral part of firms’ business strategies, and this is due to the benefits offered by companies, which include: location independence, time independence, and the ability to achieve competitive advantages for businesses (Whiteley, 1998, cited in Ling, 2001; Longenecker, Moore, and Petty, 1997; Purao and Campbell, 1998, cited in Ling, 2001).

There are several types of m-commerce services that are emerging, such as mobile entertainment, like purchasing ringtones and games, mobile banking that allow consumers to conduct financial transactions from their mobile devices, and mobile brokerage that gives consumers the opportunity to buy and sell stocks from any location (Lennon, 2008).

The reductions in data charges coupled with the growing penetration of the so-called smart devices have led to a situation where the mobile phone is emerging as an ideal business tool, enabling firms to complement other business channels (Clarke, 2001; Heng-Sheng and Gururajan, 2005, cited in Marti'n, 2012).

2. Overview of Mobile Commerce

M-commerce is being rapidly adopted in various countries around the world, and the global market of m-commerce has grown by 13.7% in 2013 (GSMA and Kearney, 2013). For example, USA revenues from m-commerce reached \$3 billion in 2010 and are expected to reach \$31 billion by the end of 2016 (Forrester Research Inc., 2010). In Spain, mobile commerce habits are rapidly becoming popular (Spain is one of the top countries in the world in terms of the penetration of smart phone and broadband uses for both consumers and companies), and the number of users acquiring products or services via the mobile phone has increased by 14.8% in 2011 (ONTSI, 2008–2009, cited in Marti'n, 2012). Japan, Korea, and Europe are using mobile commerce the most, while Arab countries in general and Jordan in particular are still in the early stages of using this technology despite the widespread of smart phones (Lennon, 2008).

In Jordan, the main players in the telecommunication industry are Jordan Telecom, Zain Jordan, Umniah, and Orange Jordan. Regarding the Jordanian market readiness, a study conducted by Extensia, “a specialized company in market researches to evaluate the telecommunication industry in Jordan,” indicated that this industry is considered highly developed and showed a considerable ability to take advantage of any new opportunity, such as m-commerce (Iss, 2011; Nassuora, 2013; Al-Louzi Extensia, 2012). This fact was related to the governmental support to expand communication services penetration.

The telecommunication market in Jordan is expected to expand and grow, and this can be noticed through the annual increase in the number of subscribers, penetration rate, volume of investments, number of employees, and total outgoing and incoming mobile traffic (The Jordanian Telecommunication Regulatory Commission [TRC], 2012). In 2007, a national strategic plan for e-commerce, including m-commerce, has been launched by the Jordanian Ministry of Information and Communication Technology (MICT), which indicated that the governmental support for e-commerce adoption is expected to be developed gradually (MICT, 2007). The strategy was mainly based on secondary data and stated that different factors affect the adoption of m-commerce. These factors include environmental, organizational, economical, political, and cultural factors. This research will examine the environmental factors based on primary data collected from top management officers within telecommunication firms in Jordan.

3. Research Objectives

The main purpose of this research is to explore the impact of environmental factors on m-commerce adoption by telecommunication firms in Jordan. Also this research aims to

1. Explore the current situation of m-commerce adoption by telecommunication firms in Jordan
2. Investigate the level of acceptance for m-commerce adoption by telecommunication firms' top management in Jordan
3. Provide a set of suggestions and recommendations that may help telecommunication companies in Jordan adopt m-commerce

4. Literature Review

Around the world, many studies have been conducted to determine factors affecting adoption of new technologies such as m-commerce. It was noticed that most of these studies focused on customer point of view while a limited studies have focused on firm's perspective (Martin et al., 2012). Limited resources were found about adopting m-commerce in developing countries in general and Jordan in particular. Therefore, previous studies reviewed include various models to determine environmental factors affecting adoption of new technologies such as e-commerce and m-commerce from firm's perspective. Developing countries, such as Jordan, shows slow progress toward adoption of m-commerce compared to developed countries that reaped massive benefits from this trade (Al-Louzi, and Iss, 2011; Nassuora, 2013). However, Jordan had one of the highest rates of Smart Phones usage among developing countries (Al-Louzi, 2012).

For the purposes of the study, Theories and a comprehensive literature about e-commerce adoption on developed and developing countries is reviewed as explained next.

4.1 Theories of New Technology Adaptation Such as Ecommerce

Different frameworks provided by previous studies to determine factors affecting adoption of new technologies such as e-commerce and m-commerce, were developed based on theories. These include the Theory of Reasoned Action (TRA), Diffusion of Innovation Theory, Technology Acceptance Model(TAM) and the Theory Planned Behavior (TPB) (Alexander et al., 2006; Wei et al., 2008). The TRA which developed by Martin Fishbein and Icek Ajzen to predict the behavioral intention, indicated that a person’s performance of a specified behavior is determined by his or her behavioral intention (BI) which equal the person attitude (A) combined by the subjective norm (SN) that represent the person's perception about service/ product importance to him as shown in figure 1 below (Alexander et al., 2006; Hennessy, 2012).



Figure 1: Theory of Reasoned Action Diagram

Rogers' Diffusion of Innovations Theory is widely used on technology adoption frameworks which tries to explain factors affecting spreading of new ideas or technologies through cultures (Sahin, 2006). The theory indicated that there are four elements affect ideas or technologies diffusion that include innovation, communication channels, time, and a social system (Rogers, 1994). Also the Diffusion of Innovations Theory propose that relative advantage, compatibility, complexity, trialability and observability are the perceived attributes that affect rate of adoption of innovation as shown in figure 2 below (Wei et al., 2008).

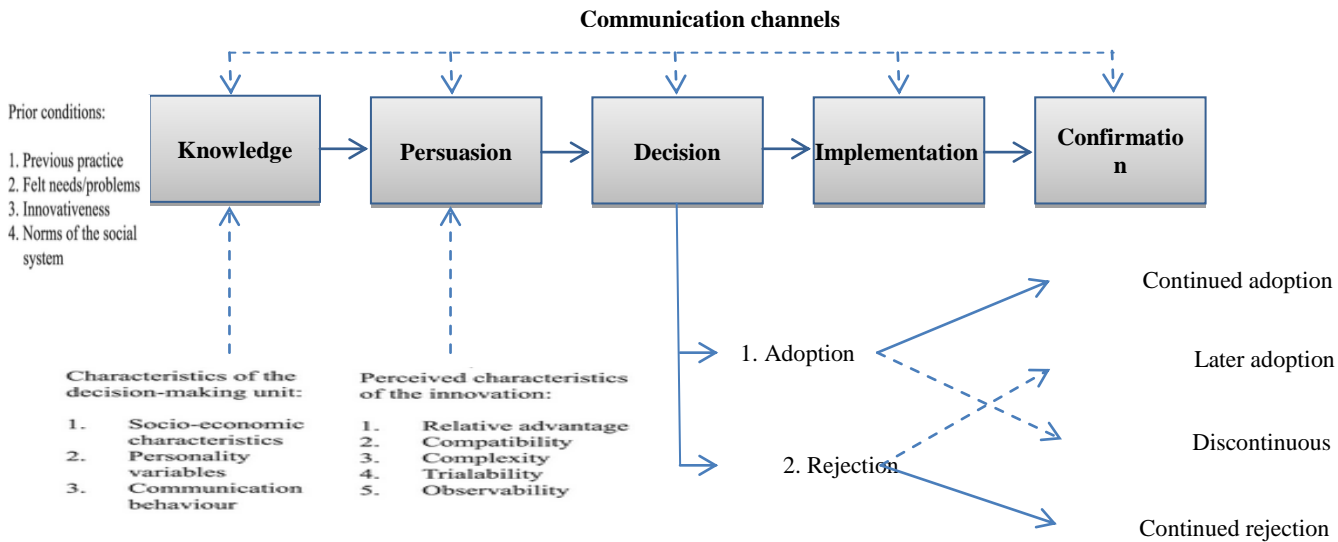


Figure 2: Theory of Diffusion of Innovations Diagram

the TAM tries to explain user acceptance and usage of information systems, which was developed by Fred Davis and Richard Bagozzi and stated that the actual use of any new system is influenced by its perceived ease-of-use and perceived usefulness as shown in figure 3 below (Legris et al., 2003; Wu and Wang, 2005).

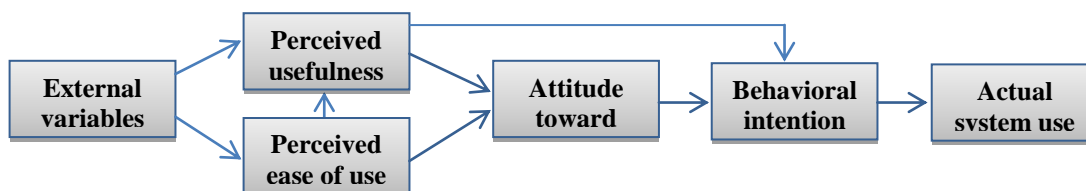


Figure 3: Technology Acceptance Model

The TPB which is an extension of the theory of Reasoned Action, presented by Icek Ajzen by adding the perceived behavioral control (Ajzen, 1991). TPB refers to the attitude toward behavior, subjective norms (beliefs about significance of use) and perceived behavioral control directly influence behavioral intentions and behaviors, as shown in figure 4 below (Alexander et al., 2006; Wei et al., 2008).

Next, the adaptation of e-commerce will be discussed in developed countries, developing countries and in Jordan.

4.2 E-Commerce Adoption in Developed Countries

On a global level, Premkumar and Roberts (1999) carry out a research to identify factors influencing rural small businesses level of adoption for new information technologies in United States of America. Their research model consist 10 independent variable categorized under innovations, organizational and environmental characteristics.

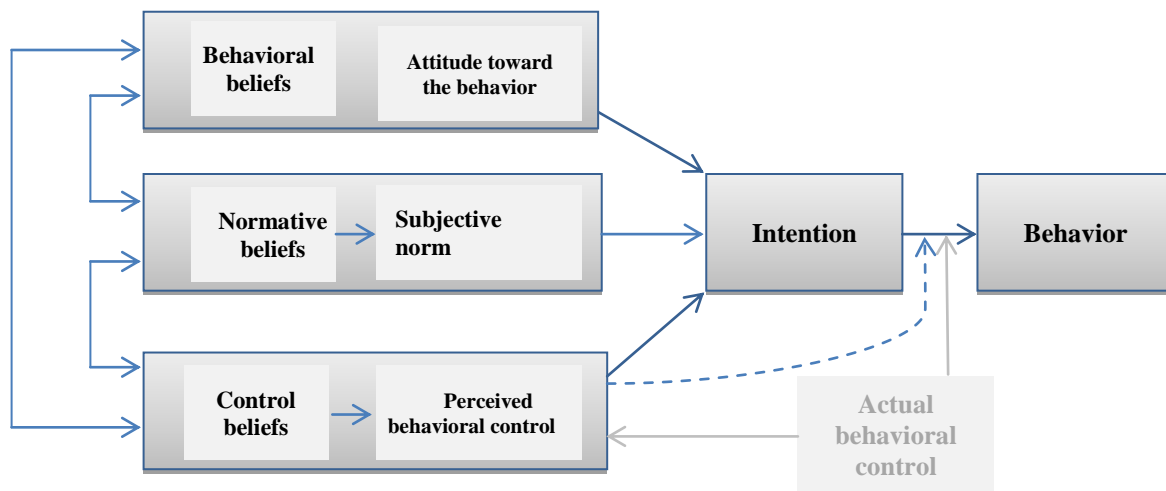


Figure4: Theory of Reasoned Action Diagram

Analyzing data collected from 78 organization using structured interviews, indicates that relative advantage, top management support, organizational size, external pressure and competitive pressure are the main factors affecting level of adoption for new technologies by organizations. Ling (2001) developed a model to identify factors influencing electronic commerce adoption and diffusion in SMEs, by conducting cross country study includes Australia and Singapore. Lings' model had two main categories which are; Internal environmental factors (organization, innovation, and communication factors), and external environmental factors (factors related to industry, and national support).

Daniel and Grimshaw (2002) in their exploratory comparison of electronic commerce adoption in large and small enterprises in united kingdom, developed a framework of eight factors which are; competitive pressure, expansion of market reach, customer pressure, provide enhanced customer service, direct communication, operational efficiency/reduce costs, supplier pressure. 1291 survey were collected form SMEs and large companies form wide range of industry sectors. the study found that provide enhanced customer services and suppliers pressure are the main factors influencing SMEs adoption for e-commerce, while operational efficiency/reduce costs was the main factor affecting large companies' decision to adopt e-commerce.

Gibbs and Kraemer (2004) investigate the determinants of scope of e-commerce use by conducting a cross-county study. The research model had been designed to combine technological, organizational and environmental factors affecting e-commerce adoption. 2,139 surveys had been collected from organizations in ten countries and three sectors. It was found that technology resources, perceived strategic benefits, financial resources, legislation barriers, external pressure, and government promotion are the main factors that influence e-commerce adoption level by organizations

Aguila-Obra and adilla-Mele´ndez (2006) study the organizational factors affecting Internet technology adoption in Spain by using innovation adoption theory.

Based on literature the study present a framework consist of four categories of independent variables affecting adoption level that include; organizational factors, external factors, technological factors, and firm size. they collected data from 289 companies using questionnaire survey. It was found that technological resources and managerial capabilities are the main factors affecting internet technology adoption level.

Alexander (2006), studied the environmental, organizational, information technology and assimilation factors in small firms. The researcher provided a module includes several independent variables that he expected to affect adoption categories based on environmental, organizational, and competitive strategy. He found that factors that mainly driver new technology adoption are; industry, regulatory, and owner desire.

Snowden et al. (2006), conducted an action research to study technology acceptance and m-commerce in an operational environment by using technology acceptance model in England. The research present a model of factors that he expected to affect adoption of m-commerce. These include: technology complexity, individual preferences, facilitating conditions, social influences, wireless trust environment, near-term and long-term usefulness, ease of use attitude to use, and intention to use. This study clearly showed that technology acceptance is not a straightforward set of one dimension factors and their inter-relationships, but that there are bidirectional relationships, and influences between layers of an organization.

Chong and et al. (2009), conducted an empirical study to explore factors affecting adoption level of collaborative commerce by electronic organizations in Malaysia. Data was collected from 109 organizations using questionnaire survey. A framework consist four main categories of factors (Innovation attributes, environmental, information sharing culture, and organization readiness), It was found that sharing culture had the strongest impact on adoption level followed by external environment, organization readiness and external environment while innovation attributes have no significant affect on level of adoption of m-commerce by organizations.

Li and Xie (2012), conducted a research to build a strategic framework for determining e-commerce adoption. By reviewing literature, researchers categorized factors that affect e-commerce adoption based on environmental and technological perspectives. He indicated that factors that show high affect on adoption are; managerial attitudes, corporate strategies, external pressures, and firms' technology strengths.

4.3 E-commerce Adoption in Developing Countries

Molla and Licker (2005) conducted a study to develop a model to identify the factors affecting e-commerce adoption in South Africa. The model main factors are; perceived organizational e-readiness and perceived external e-readiness. The model was validated by conducting an experimental includes 150 businesses in South Africa.

Kapurubandara and Lawson (2006) studied the barriers and relevant support required to adopting ICT and e-commerce by SMEs in Sir Lanka. On the research module, factors were classified according to four categories which are; Internal and external barriers and External and internal support to the Organization. 150 usable surveys filled by SMEs mangers and analyzed. It was found that the main barriers that affect adoption of ICT and e-commerce are related to; top management, external support activities, legal and regulatory, lake of intervention from the government for solutions.

Aghaunor and Fotoh (2006) explored the factors affecting e-commerce adoption by banking sector in Nigeria by using Innovation Diffusion Theory. The research framework includes organizational factors, perceived technology factors, and perceived external factors, which had been tested based on data collected from eight banks by using survey questionnaires and semi-structured interviews. The researchers found that factors that affect adoption are; Perceived complexity, Perceived benefits, Organizational competence, Perceived compatibility, Supporting industries e-readiness, Management support, Market e-readiness, IT capability, and Government e-readiness

By reviewing the literature about the factors affecting adoption and diffusion of e-commerce, AlGhamdi et al. (2013), evaluated Saudi Arabia position on e-commerce. The researchers defined four categories of factors that affect the adoption. These include; factors related to businesses, customers, environmental and governmental support. The study argues that the significant factors that affect e-commerce adoption in Saudi Arabia are governmental support and customers and retailers involvement level.

4.4 E-Commerce in Jordan

On the national level, Abbad (2011) studied the limitations and barriers that face e-commerce in Jordan from consumer perspective. Security and trust, Internet experience, Language, Legal issues, and Technology acceptance (ease of use and usefulness) were factors that included in the research model. Data was collected by filling 170 valid questionnaires with representative sample. The researchers found that factors affecting e-commerce adoption are; security and trust, internet experience, enjoyment, language, legal issue, and technology acceptance.

An empirical study conducted by Shannak and Al-Debei (2005) to evaluate the current situation of e-commerce in Jordan, shows that Jordan has sufficient e-commerce requirements in general. The factors that had been studied were Technology telecommunication infrastructure, Institutional and governmental support, Organizations readiness and support, and Community culture. Analyzing the data collected from 14 structured interviews and 95 questionnaires filled by companies, indicated that Technology and Telecommunication Infrastructure, Institutional and Governmental Support, and Organizations Readiness and Support affect adoption rate of e-commerce positively while Community culture affect it negatively.

From the literature review we propose that environmental factors have significant influence in m-commerce adoption. These factors include regulatory environment, competitive pressure, trading partner pressure, governmental pressure, support industries pressure, social influence, customer pressure, suppliers' pressure, and political stability. This research will examine the influence of these factors on m-commerce adoption from the Jordanian telecommunication firms' perspectives. A research model and hypotheses will be developed based on these factors as explained in the following chapter.

5. Research Framework and Hypotheses

After screening the main theories on new technology adoption, such as m-commerce, and reviewing previous researches conducted globally, regionally, and locally, a framework was developed, which contains the environmental factors that are expected to affect and influence m-commerce adoption by telecommunication firms in Jordan. The framework consists of nine environmental factors, which represent the independent variables. These factors include regulatory environment, competitive pressure, trading partner pressure, governmental pressure, support industries pressure, social influence, customer pressure, supplier pressure, and political stability. These independent factors will be used to explain the level of m-commerce adoption and considered to be the dependent variable, as illustrated in figure 5 below.

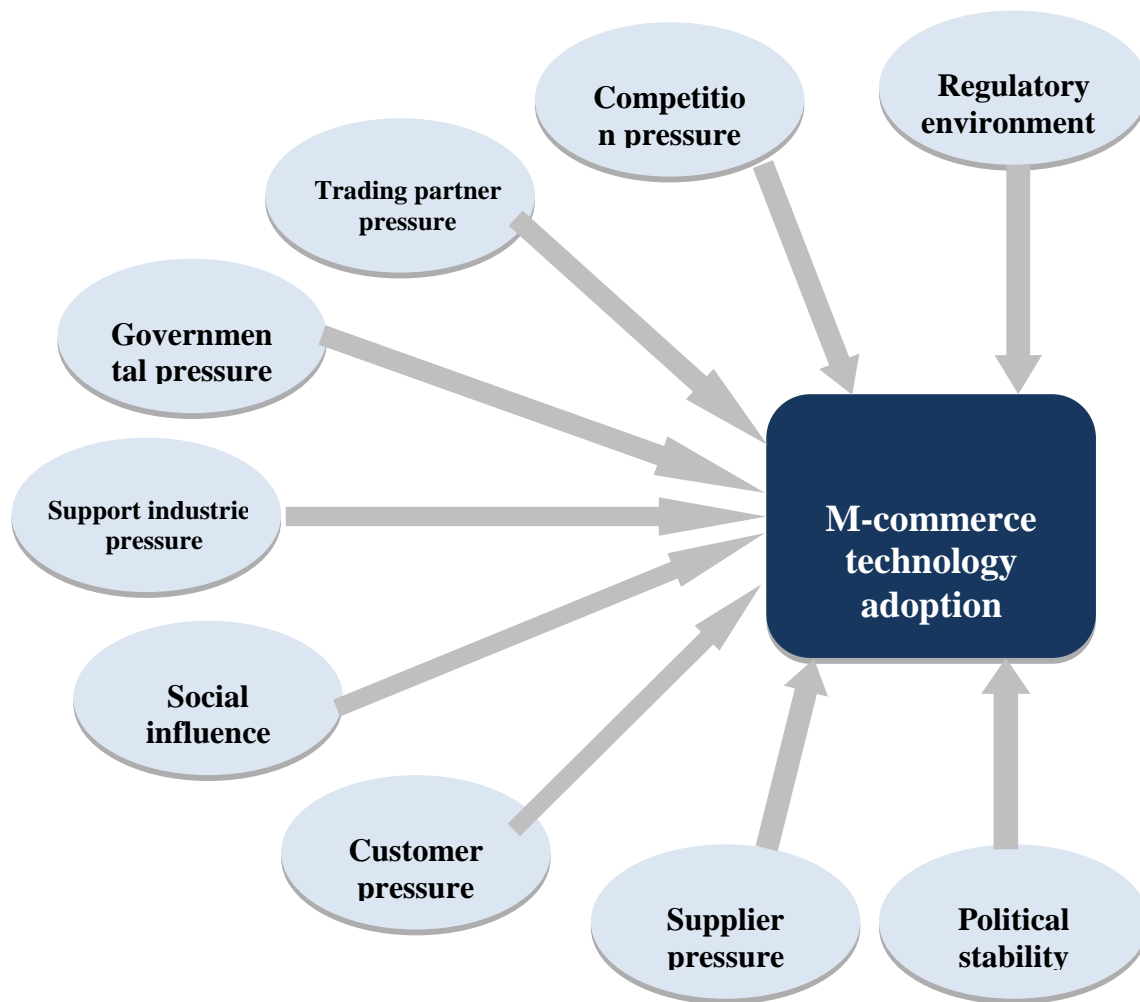


Figure 5: Research Framework

Based on the research model that was developed from the literature review, the research hypotheses are generated as illustrated in table 1 below.

Table 1: Summary of the Factors and Hypotheses of The Research

Factor	Hypothesis
Regulatory environment	<u>H1</u> : Regulatory environment is positively associated with the adoption level of m-commerce
Competitive pressure	<u>H2</u> : Competition intensity is positively associated with the adoption level of m-commerce
Trading partner pressure	<u>H3</u> : Trading partner pressure is positively associated with the adoption level of m-commerce
Governmental pressure	<u>H4</u> : Governmental pressure is positively associated with the adoption level of m-commerce
Support industries pressure	<u>H5</u> : Supportive industries is positively associated with the adoption level of m-commerce
Social influence	<u>H6</u> : Social influence is positively associated with the adoption level of m-commerce
Customer pressure	<u>H7</u> : Customer pressure is positively associated with the adoption level of m-commerce
Supplier pressure	<u>H8</u> : Supplier pressure is positively associated with the adoption level of m-commerce
Political stability	<u>H9</u> : Political stability is positively associated with the adoption level of m-commerce

6. Methodology

Due to the lack of empirical research that studies the factors affecting the adoption of m-commerce by telecommunication firms in Jordan, the researcher considers this research as an exploratory investigation. In general, there are two methods for conducting research: quantitative and qualitative. The quantitative approach is chosen by researchers because it is considered more objective and scientific than qualitative approach (Crowther and Lancaster, 2008; Kothari, 2009; Hennink et al., 2011).

Quantitative research deals with numerical and measurable data collected and analyzed statically to investigate the research problem (Bryman and Bell, 2007; Sekaran and Bougie, 2010). In quantitative research, questionnaire is the most popular tool to gather and collect data from participants (Fowler, 2002; Sekaran and Bougie, 2010). Therefore, a questionnaire is chosen by the researcher as the main data collection tool.

The research population includes all managerial-level employees in the main telecommunication firms in Jordan (TRC, 2012). However, because of time and cost constraints, the researchers decided to choose a sample that represents the population. There are two major types of sampling techniques: probability and non-probability sampling. In probability sampling, every unit in the population has a chance (greater than zero) to be selected as part of the sample. On the other hand, non-probability sampling is where some units in the population have no chance of selection (Fowler, 2002; Bryman and Bell, 2007; Sekaran and Bougie, 2010). As probability sampling can be more accurate by weighing sample units based on the probability of selection, the researcher chose it as the sampling methodology. Then the stratified random sampling has been chosen to ensure that telecommunication firms are adequately represented (Sekaran and Bougie, 2010; Bryman and Bell, 2007).

Referring to Krejcie and Morgan's (1970) sample size table (which is a well-known and reliable table to determine sample size), the sample size should be 132 for a population size of 200. The questionnaires were distributed equally to the three telecommunication companies. The researchers' aim is to get 132 responses that represent the employees within the telecommunication firms in Jordan. However, due to time, cost, and companies' approval limitations, 170 questionnaires had been distributed but only 102 questionnaires were returned and considered valid for further analysis, giving a response rate of 60.1%.

7. Research Analysis

The research hypotheses that have been formulated from the literature are tested to determine the important environmental factors that affect and influence m-commerce adoption. In addition, the results of the analysis will be used to refine the original research model. Multiple linear regression analysis is considered the most popular method for testing research hypotheses using SPSS (Bryman and Cramer, 2005). In this research, multiple linear regressions are used to test the research hypotheses and answer the research questions. The nine hypotheses that represent the independent variables are tested to examine their influence on m-commerce adoption. The best type of regression to test such hypothesis is called the stepwise multiple linear regression (Yan and Su, 2009).

The results of the stepwise regressions for the nine independent variables that make up the original model identified six variables that have significant affect in predicting the m-commerce implementation success, with p-values < 0.05, as summarized in table 2 below. These variables are competitive pressure, regulatory issues, social influence, customer pressure, support industries pressure, and government pressure.

Table 2: Results of the Stepwise Regressions, Which Show the Significant Variables of the Research Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
6	(Constant)	.677	.070		9.714	.000
	Competition Pressure	.266	.059	.346	4.533	.000
	Customer Pressure	.102	.057	.128	1.784	.078
	Regulatory Issues	.245	.051	.308	4.796	.000
	Support Industries	.134	.027	.170	4.900	.000
	Gov_pressure	-.105-	.022	-.185-	-4.676-	.000
	Social Influence	.216	.053	.266	4.042	.000

a. Dependent Variable: Mcommerce_adoption_level

(Coefficient ^A)

There are three non-significant variables excluded from the original model, with p-values > 0.05, as shown in table 3 below. These variables are trading partner pressure, political stability, and supplier pressure.

Table 3: Results of the Stepwise Regressions, Which Show the Excluded Variables from the Research Model (Excluded Variables A)

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
6	Trading Partner Pressure	-.080 ^g	-.843-	.402	-.088-	.029
	Political_stable	-.106 ^g	-1.274-	.206	-.132-	.039
	Suppliers_pressure	.106 ^g	1.701	.092	.175	.067

a. Dependent Variable: Mcommerce_adoption_level

g. Predictors in the Model: (Constant), Competition Pressure, Customer Pressure, Regulatory Issues, Support Industries, Gov_pressure, Social Influence

7.1 Assessing the Importance of Independent Variables

Evaluating the importance of each independent variable in predicting the m-commerce implementation success within Jordanian telecommunication companies can be examined by the coefficient table (standardized coefficients), obtained from the analysis shown in table 4 below.

Table 3: Results of the Stepwise Regressions, Which Show the Significant Variables of the Research Model

		Unstandardized Coefficients		Standardized Coefficients		
6	(Constant)	.677	.070		9.714	.000
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	Support Industries	.134	.027	.170	4.900	.000
	Gov_pressure	-.105-	.022	-.185-	-4.676-	.000
	Social Influence	.216	.053	.266	4.042	.000

a. Dependent Variable: Mcommerce_adoption_level

The coefficient table above shows that the highest beta coefficient is 0.346, which is for competition pressure. This means that this variable makes the strongest contribution to predict and explain the m-commerce adoption level within Jordanian telecommunication companies. The second beta coefficient is 0.308, which is for regulatory environment, followed by social influence with 0.266, support industries with 0.170, customer pressure with 0.128, and finally comes government pressure with a -0.185 beta coefficient.

7.2 Evaluating the Model

The model summary in table 5 below includes the value of R^2 , which shows how much the variance in the dependent variable (m-commerce adoption level) is explained by the six independent variables. Table 5 shows the value of R^2 to be 0.975, which means that the six independent variables together explain 97.5% of the dependent variable of m-commerce adoption.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.969 ^a	.939	.939	.22843
2	.979 ^b	.959	.958	.18787
3	.982 ^c	.965	.964	.17545
4	.984 ^d	.967	.966	.16988
5	.985 ^e	.971	.969	.16141
6	.988 ^f	.975	.974	.14966

Consequently, from the nine hypotheses tested from the original model, only six hypotheses were found to be supported, as summarized in table 6 below.

Table 5: Results of the Regression Analysis of the Research Hypotheses of the Original Model

Factors	Hypotheses	Question Code	Results
Regulatory environment	<u>H1</u> : Regulatory environment is positively associated with the adoption level of m-commerce	Reg_Issues	Supported
Competitive pressure	<u>H2</u> : Competition intensity is positively associated with the adoption level of m-commerce	Comp_Pressure	Supported
Trading partner pressure	<u>H3</u> : Trading partner pressure is positively associated with the adoption level of m-commerce	Trad_Partner_Pressure	Not Supported
Governmental pressure	<u>H4</u> : Governmental pressure is positively associated with the adoption level of m-commerce	Gov_pressure	Supported
Support industries pressure	<u>H5</u> : Supportive industries is positively associated with the adoption level of m-commerce	Support_Indust	Supported
Social influence	<u>H6</u> : Social influence is positively associated with the adoption level of m-commerce	Social_Influence	Supported
Customer pressure	<u>H7</u> : Customer pressure is positively associated with the adoption level of m-commerce	Customer_Pressure	Supported
Supplier pressure	<u>H8</u> : Supplier pressure is positively associated with the adoption level of m-commerce	Supplier_Pressure	Not Supported
Political stability	<u>H9</u> : Political stability is positively associated with the adoption level of m-commerce	Political_Stable	Not Supported

8. Interpretation of the Results and Key Findings

The main goal of conducting the quantitative analysis was to answer the research questions on the basis of statistical tests. The main question in this research was to identify the significant environmental factors that affect a Jordanian telecommunication firm's decision to adopt m-commerce applications. The results are explained in the following sections.

Based on the analysis test applied to the original model, the responses of the Jordanian telecommunication companies expressed the importance of the regulatory environment for m-commerce adoption. This results is supported by the findings of Abbad (2011), Aguila-Obra and Padilla-Meléndez (2006), Gibbs and Kraemer (2004), Alghamdi et al. (2013), Li and Xie (2012), and Kapurubandara and Lawson (2006).

Competitive pressure is created by other service providers within the industry, which forces competitors to differentiate and add competitive value to their products by adopting new technologies, such as m-commerce. As shown above, respondents of the Jordanian telecommunication companies expressed the importance of competitive pressure for m-commerce adoption. This result complies with the findings of Chong et al. (2009), AlGhamdi et al. (2013), and Alexander (2006).

Trading partner pressure is generated by other firms that may afford their services through mobile technology, such as banks and trading companies. This factor is found to be not supported by the regression analysis test applied to the original model. This result is not in line with the findings of Ling (2001) and Aguila-Obra and Padilla-Meléndez (2006), who stated that trading partner pressure is important for m-commerce adoption.

Governmental pressure is reflected by the level of governmental support, level of national infrastructure, and governmental promotion for the adoption of m-commerce. This factor is found to be supported by the regression analysis test applied to the original model. The results of this research support the findings of Gibbs and Kraemer (2004), Shannak and Al-Debei (2005), AlGhamdi et al. (2013), Molla and Licker (2005), and Premkumar and Roberts (1999), who stated that governmental pressure is important for m-commerce adoption.

Support industries pressure, presented by the level of governmental support, level of national infrastructure, and governmental promotion for adoption of m-commerce, is found to be supported by the regression analysis test applied to the original model. This result is in line with the findings of Aghaunor and Fotoh (2006), Premkumar and Roberts (1999), Alexander (2006), Molla and Licker (2005), who stated that support industries pressure, is important for m-commerce adoption.

Social influence can be defined by customers and top management as the level of acceptance and awareness level toward m-commerce and new technologies is found to be supported by the regression analysis test applied to the original model. This result is supported by the findings of Chong et al. (2009), Snowden et al. (2006), Li and Xie (2012), Kapurubandara and Lawson (2006), and Al-Debei (2005), who stated that social influence affects m-commerce adoption.

Customer pressure was linked directly to customer readiness, and expectations are found to be supported by the regression analysis test applied to the original model. The result shown above is supported by the findings of Daniel and Grimshaw (2002), Kramer (2004), and Alexander (2006), who stated that customer pressure is important for m-commerce adoption.

Supplier pressure in this research reflected by availability of capable suppliers for software, hardware, and training needed for m-commerce applications is found to be not supported by the regression analysis test applied to the original model. Result shown above is not supported by the findings of Grimshaw (2002), who stated that supplier pressure is important for m-commerce adoption.

Political stability which examines the relationship between political stability and the adoption level of m-commerce and suggests that it has a positive impact on the successful adoption of m-commerce is found to be not supported by the regression analysis test applied to the original model. This result is not supported by the findings of Alexander (2006) and Kapurubandara and Lawson (2006), who stated that political stability is important for m-commerce adoption.

9. Conclusions and Recommendations

9.1 Conclusions

Based on the questionnaires, data analysis results, and literature review conducted to identify the environmental factors affecting m-commerce adoption by telecommunication firms in Jordan, the researchers concluded the following:

1. The adoption of m-commerce within the telecommunication firms is still in its early stages in Jordan.
2. From the nine factors examined in this research, only six are found to be important and influence the decision of m-commerce adoption. These are competitive pressure, regulatory environment, social influence, support industries, customer pressure, and government pressure, respectively.
3. The results revealed that competition pressure is the most influential factor that impacts the successful adoption of m-commerce within telecommunication firms in Jordan.
4. Governmental support for m-commerce adoption is expected to develop gradually, driven by real commitment, represented by the national strategic plan for e-commerce and m-commerce that had been launched in 2007 by the Jordanian Ministry of Information and Communication Technology (MICT).
5. The telecommunication industry is considered highly developed and has shown a considerable ability to take advantage of any new opportunity, such as "m-commerce."

9.2 Recommendations

Based on the research findings, several recommendations can be addressed to decision makers in telecommunication firms and government officials in Jordan, which include the following:

1. Jordanian telecom firms should have clear, long-term m-commerce strategies that involve vision, goals, and objectives for m-commerce implementation. This strategy must be communicated to everyone in the organization so that they can all share the responsibility of achieving it.
2. Jordanian telecom firms should be more aware of the benefits and risks of m-commerce in order to implement it successfully.
3. Jordanian telecom firms should focus on competition as an advantage to adopt m-commerce in their companies.
4. Governmental institutions should focus on carrying out further efforts in representing a suitable tax laws supportive for m-commerce.
5. Jordanian telecom firms should focus on increasing customers' and top management's awareness and level of acceptance toward m-commerce services as a key success factor for m-commerce services.
6. Investors in the telecom industry should recognize m-commerce supportive industries, such as m-commerce technical support and training, as attractive investment opportunities in Jordan.

7. Jordanian telecom firms should gradually implement initiatives to increase customer readiness toward m-commerce services.

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