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# **An Empirical Study of Critical Factors of Electronic Commerce Adoption for Various Enterprises in Palestine**

Rami Hodrab<sup>1,2</sup>, [Sami Awad](mailto:sami.awad@aaup.edu.ps)<sup>2</sup>, [Mansoor Maitah](mailto:mansoor.maitah@ua.ac.zk)<sup>1</sup>

<sup>1</sup> Faculty of Engineering and IT, Arab American University, Jenin, Palestine, *PO Box 240, Jenin, West Bank, Palestinian Territory, [ramihodrob@gmail.com](mailto:ramihodrob@gmail.com), [sami.awad@aaup.edu.ps](mailto:sami.awad@aaup.edu.ps)*

<sup>2</sup> Department of Economics, Faculty of Economics and Management, Czech University of Life Sciences Prague, Czech, Kamýcká 129, 165 21 Praha 6 - Suchbátka, Czech Republic  
*[maitah@maitah.com](mailto:maitah@maitah.com)*

## **Abstract**

In this paper, we investigate the most crucial factors for successful enactment in adopting electronic commerce transactions for enterprises business in Palestine. Out of a promising gradient of 1500 enterprises spreading in Palestine with various business types, we targeted 1000 enterprises' owners, managers and customers, with 760 usable questionnaires reverted, providing a 76 percent response rate. The results of the study emboldened the most critical factors to advance electronic commerce adoption creating a factor structure, encompassing 19 factors organized in descending order using three tiers. All the factors were in line with comparable studies and cited writings.

**Keywords:** **electronic commerce (e-commerce); electronic commerce adoption factors; intention-based theories; Palestine**

## **INTRODUCTION**

The emergence of electronic commerce (EC) practices changed the way many people all over the world live. E-commerce was developed and then advanced within the realm of information and communication technology (ICT). Professionals in e-commerce try to adopt the associated technology for facilitating the every-day business activities of various enterprises. The technology entails communication with patrons to conquer time and place restrictions with effective cost saving mechanisms. As a result of implementing ICT and adopting EC on enterprises' and peoples' dealings, the nation's economic growth is positively influenced. Many studies such as [Jorgenson \(2002\)](#), [Dedrick et al \(2003\)](#), [Kim \(2004\)](#), and [Ramayah \(2005\)](#) disclose that delaying technology implementation and adoption will negatively affect per capita income, work experience and productivity.

In developing countries such as Palestine - in our case - ICT output gains mainly stem from activities of the ICT sector itself, rather than the utilization of ICT infrastructure for conducting other businesses. The development of the ICT sector advanced employment and businesses in ICT and supporting industries. E-commerce sector spun out as enterprises started to adopt technology to boost automation levels and reduce costs. The materialization and unremitting growth of social networks and Web 2.0 enterprises

together with the growing status of smart phones and technology smart applications advance the development of businesses ([Garnsey and Heffernan, 2005](#); [Barba-Sánchez et al., 2007](#)).

The growth of the economic sector in Palestine due to various enterprises transactions and business activities is timid compared to many developing countries. The real development of economic sector in Palestine started along with the formation of PA (Palestinian Authority) in West Bank and Gaza Strip in 1993 as a conclusion of the Oslo agreement.

The increasingly evolving competition between enterprises, and the highly informed customers, rapidly changed technologies and applications for EC. As business' environments characterized by volatility and uncertainty, EC and other innovation driven work environments trigger the enterprises needs for continuous performance improvement in an innovative way. Thus applying EC practices to the activities of enterprises is a robust example of what innovative practices enterprises need nowadays. So for the enterprise to be competitive, it must adopt flexibility and innovation into its operations, and to increase its performance it must adopt the new trends of EC practices to conduct its business transactions efficiently breaking the limitations of time and place i.e.(communication, financial and operational transactions). The adoption of e-commerce practices must be included within different functions of enterprise activities and oriented toward exceeding the customers' and stakeholders' requirements.

To be successful within the e-commerce marketplace, all parts of the enterprise must work properly together towards the adoption of e-commerce practices, recognizing that each person and each activity affects and is affected by others. To advance competitiveness, enterprises are looking for advanced level of effectiveness throughout their functions and processes by adopting new trends of e-commerce knowledge and practices ([Grandon and Pearson, 2004](#); [Koh and Maguire, 2004](#)). The enlarged consciousness of senior directors, who have predictable trends that e-commerce is an imperative strategic issue, is revealed as an essential emphasis for all levels of the enterprise to be accommodated with e-commerce tools, processes and applications ([Francis, 2010](#)). This requires defining and implementing several practices recognized as factors of e-commerce adoption in this study as will be shown later in this paper.

In the last two decades Palestine's ICT sector has evolved, empowered by the readiness of related infrastructure such as broadband, computers, software applications, networks and wide spread internet access. This infrastructure is necessary for preparing e-commerce segment as a driver for constructing a competitive business environment. Building a Palestinian competitive e-commerce environment is essential to enable enterprises with different types and sizes to market their products and services regionally and internationally. The problematic issue here is that Palestinian e-commerce infrastructure, environment and perceived culture is not at the level of needed standards and quality. The absence of the needed e-commerce services and practices deprived the enterprises in Palestine from a gaining a competitive advantage to compete regionally ([White et al., 2012](#)). Our study arose from this argument, where there is a need to highlight the factors impelling the adoption of e-commerce practices for enterprises in Palestine. Effective adoption of e-commerce practices will advance the quality services level of these enterprises in Palestine and empower them to compete regionally.

This study aims to investigate the factors that impact managers, employees and customers' acceptance and awareness of e-commerce practices for various enterprises in Palestine, by analyzing empirical data of e-commerce adoption factors that apply to different enterprises in Palestine.

In what follows, Section 2 discusses literature review. In section 3, we illustrate the study components. In section 4, we introduce methods and measures. In section 5, we illustrate analysis of responses and range analysis. Section 6 discusses the research findings. Section 7 summarizes and concludes our research.

## LITERATURE REVIEW

Many theories developed as a basis for understanding the factors affecting the adoption of information systems (IS) such as e-commerce adoption ([Taylor and Todd, 1995](#)). Intention-based theories are a robust example of these adoption oriented studies that clarify factors of users' behavioral intentions for e-commerce adoption. The major theories that enlighten the relationship between user beliefs, attitudes, and intentions are Theory of Reasoned Action (TRA – [Fishbein and Ajzen, 1975](#)), Technology Acceptance Model (TAM – [Davis, 1989](#); [Al-Gahtani, 2008](#)) and Theory of Planned Behavior (TPB – [Ajzen, 1991](#)). TAM states that there is a relation between IS adopting affected by the attitudes of users and perceived usefulness in addition to perceived ease of use. TAM was projected to anticipate information systems acceptance and occupation usage ([Davis, 1989](#); [Al-Gahtani and King, 1999](#)). TPB focus is on the perceived behavioral control, as it concentrates on the perceived ease or behavior performance difficulty. TAM and TPB were derived from TRA, which proposes that beliefs influence attitudes and direct intentions towards generating behaviors. TRA clearly indicates that attitude is driven by performing behavior, subjective norms, and social pressures that influence behavior. Unified Theory of Acceptance and Use of Technology (UTAUT) identifies 70% of the divergence in intention clarifies a wide-ranging assessment of eight well-known models ([Venkatesh et al. 2003](#)). These eight models are TRA, TAM, Motivational Model, TPB as a model integrating factors from TAM and TPB (C-TAM-TPB – [Taylor and Todd, 1995](#)), Innovation Diffusion Theory (IDT – [Moore and Benbasat, 1996](#)), Social Cognitive Theory (SCT – [Compeau and Higgins, 1995](#)), and Model of PC Utilization (MPCU – [Thompson et al. 1991](#)). The UTAUT model states that four elements advance the behavioral intentions: (i) performance anticipation, (ii) effort anticipation, (iii) social influence, and (iv) facilitating conditions. In addition, UTAUT also clarifies the role of four key mediator variables: gender, age, experience, and voluntariness of use. UTAUT completes the philosophy of TAM with two more factors (in addition to perceived ease of use and perceived usefulness): social influence and facilitating conditions. Previous studies state the consequence of four elements of UTAUT on users' behavioral intention ([Carlsson et al., 2006](#); [Park et al., 2007](#); [Wang and Liao, 2007](#), [Wang et al., 2006](#); [Wessels and Drennan, 2010](#)).

In this framework, we propose the following adoption factors affecting the intention to use e-commerce services: Perceived usefulness, Perceived ease of use, Social impudence, Facilitating conditions, Perceived cost of use, Credibility, Perceived risk, Personal interaction, Quality of the Internet connection, Resistance to change, and Trust.

**THE STUDY**

According to the above-mentioned literature review, 27 adoption factors of e-commerce were consequently considered to build the questionnaire of this study as illustrated in table 1. The questionnaire survey targeting the stakeholders of all types of enterprises in Palestine aimed at identifying the perception of each of the 27 e-commerce adoption factors according to its level of criticality in advancing successful implementation of e-commerce. The survey was designed primarily to allow objective identification of agreement amongst the enterprises’ managers, employees and customers.

The questionnaire was designed to specifically measure the perceived importance of the e-commerce adoption factors, using the following criteria:(i) Critical: Factors that they felt were critical and absolutely essential,(ii) Important: Factors that they felt were important but not absolutely essential. The process would survive if these were not addressed, (iii) Minor importance: Factors they felt would not seriously affect the success or failure of the e-commerce process.

The target for the questionnaire covered the types of enterprises that utilize ICT in Palestine. A total of 1000 questionnaires were sent resulting in 760 usable questionnaires received correctly, achieving 76 per cent response rate that was determined at the outset.

**Table1: Constructs and questions of the questionnaire**

<b>Construct</b>	<b>Item</b>	<b>Measurement</b>
Perceived usefulness(PU)	PU1	E-commerce is useful.
	PU2	E-commerce improves commerce transactions' efficiency.
	PU3	E-commerce is compatible to modern lifestyle.
Perceived ease of use (PEOU)	PEOU1	Learning to use e-commerce services is very simple.
	PEOU2	Interaction with e-commerce sites is clear and understandable.
Perceived cost (PC)	PC1	Using internet for e-commerce is expensive such as internet charge.
	PC2	E-commerce is free of cost service.
Social influence (SOI)	SOI1	Using e-commerce is affected by personal recommendation from e-commerce users.
	SOI2	I trust my own predisposition more than advice from others, when using new technology.
Facilitating conditions (FAC)	FAC1	The needed resources and knowledge to use e-commerce are available.
Quality of Internet connection (QI)	QI1	The Internet allows to handle online financial transactions accurately and completely.
	QI2	The Internet enables customers to access the e-commerce's enterprises websites 7/24.
Security Risk (SR)	SR1	Not feeling safe in performing transactions using e-commerce services.
	SR2	Using e-commerce services may exposed to fraud or monetary loss.
	SR3	There is a possibility of outflow of my personal information, when I use e-banking.
Performance Risk (PR)	PR1	E-commerce service does not provide any better service as compared to offline service.
Credibility (CR)	CR1	Enterprise performing e-commerce has enough specialists to detect fraud and information theft.
Trust (TR)	TR1	The enterprise website is trustworthy.
	TR2	Enterprise website preserves its promises and guarantees.
Personal Interaction (PI)	RC1	E-commerce developments have improved our lives.
	RC2	Being comfortable in using e-commerce services for conducting financial actions.
	PI1	I prefer direct personal interaction on handling my commerce services rather than using e-commerce services.
Attitude (A)	A1	Using e-commerce services is a good idea.
	A2	Using e-commerce value-added services to help in doing business activities is a good idea.
	A3	Being not satisfied with using offline commerce services when performing commerce activities.
Behavioral intention	BI1	I will try to use e-commerce value-added services.

(BI)

BI2 I will strongly recommend others to use e-commerce services.

## METHODS AND MEASURES

In the study survey, three-point ordinal scale was used as a level of measurement with three classifications critical, important, and minor. The categories are non-numeric as there was no clear metrics to measure the variance between them. Numbers of 1, 2, and 3 respectively were assigned for the three levels of importance. The data implying the frequency of distribution allow the patterns of responses to be examined and described effectively in a tabular or graphic form (Weisberg, 1992; Sekaran, 2000). In our investigation, we used frequency distribution as an appropriate measure for data organization that allowed clear summarization of the responses distribution for a variable by calculating the typical value depicting the point of central tendency. Then we can measure the spread of the typical value (Carlson and Thorne, 1997). This method of investigation allowed us to realize objectively the importance of the quantitative comparison of the e-commerce adoption factors. For the three-point scale used in the questionnaire, there are only three possible levels of values. When all respondents give an e-commerce factor the same rating (one, two or three) then we will get a zero value of the range, as the maximum and minimum scores will be the same. A zero value of the questionnaire results will mean no spread on the e-commerce adoption factor, which declares a trend for all the responses to cluster into any one of the three categories. In this study Variation Ratio (VR) and index of distribution are calculated as follows:

$VR = 1 - (\text{Frequency distribution of the mode})$

Index of distribution =  $1 - (p_1^2 + p_2^2 + \dots + p_k^2)$ .

Where  $p_k$  = the proportion of responses in category  $k$  and  $k$  is the number of categories.

This index of distribution states that the focus degree of responses in some large groups as squaring magnitude. The index of distribution can be proposed as a substitute measure of conformity between respondents taking into account the response distribution of each of the e-commerce adoption factors.

## ANALYSIS OF RESPONSES

The e-commerce adoption factors response distributions were unimodal illustrating that the use of mode is of deepest trend for this level of examination. Unimodal asserts that the main stream frequently occurring responses come into sight on one group. A sum of 19 e-commerce factors was loaded on critical and important groups, while eight of these factors were reverted as of minor importance by the huge majority of the respondents. These factors are related to performance risk e-banking initiatives. This is accredited to the fact that enterprise stakeholders do trust the information and communication technology that handle the e-commerce transaction as the recent establishment of the e-commerce services for enterprises in Palestinian National Authority as they rely on new and updated technology. In addition from the social point of view enterprise customers in Palestinian context are affected by others in their attitude about using new technology, where social influences are highly apparent and influential in Palestinian society as for developing countries.

Therefore the study highlighted ten e-commerce adoption factors with a range value of one were revealed as critical, showing that these e-commerce factors force the successful

implementation of e-commerce practices. The residual 17 e-commerce factors with two range value, illustrate that some respondents returned these factors as of small significance.

Table 2: Group e-banking adoption factors by range value

Range value	No. of factors	E-banking adoption factors	Group
1	10	PU1, PU2, PU3, PEOU1, PEOU2, PC1, SR1, SR2, PR1, CR1	Critical
2	17	PC2, SOI1, SOI2, FAC1, QI1, QI2, PR1, TR1, TR2, RC1, RC2, PI1, A1, A2, A3, BI1, BI2	Critical, important, minor importance

**Critical e-commerce adoption factors confirmed in tier one, two and three**

Critical e-commerce adoption factors of tier one are those that are necessary to flourishing e-commerce adoption achievement as apparent by all respondents. This tier encompasses 10 e-commerce adoption factors ordered as follows:

1. E-banking is useful.
2. E-commerce improves commerce transactions’ efficiency.
3. E-commerce is compatible to modern lifestyle.
4. Learning to use e-commerce services is very simple.
5. Interaction with e-commerce sites is clear and understandable.
6. Using internet for e-commerce is expensive such as internet charge.
7. Not feeling safe in performing transactions using e-commerce services.
8. Using e-commerce services may exposed to fraud or monetary loss.
9. E-commerce service does not provide any better service as compared to offline service.
10. Enterprise performing e-commerce has enough specialists to detect fraud and information theft.

E-commerce adoption factors of tier two are completely essential as evident by the massiveness of the respondents while some of them identify factors to be of no effect to the success of e-commerce adoption. This tier contains nine e-commerce adoption factors, ordered as follows:PC2, SOI2, FAC1, QI2, PR1, TR1, RC1, PI1 and A1.

E-commerce adoption factors of tier three are those that have the lowest effect on the implementation process of e-commerce adoption. These factors are:SOI1, QI1, TR2, RC2, A2, A3, BI1 and BI2.

**SUMMARY AND CONCLUSION**

The globally evolved adoption of e-commerce services as a robust way for improving enterprises competitiveness and effectiveness created a need for the commencement of this empirical research. The challenges proved far more than just competing in developing countries where the know-how and practice of e-commerce services are in the very premature phases. The results of this investigation suggest that addressing the 19 nineteen critical e-commerce adoption factors increases the chances of success of implementing e-commerce practices in the Palestinian context. The analysis of the findings reveals that ten out of the nineteen critical e-commerce adoption factors

identified in this investigation shared most values covered by key principles espoused by related previous studies, as follows:

- Perceived usefulness as enterprise' customers are attracted to adopt e-commerce services, when they feel that these services are beneficial to them.
- Designing and developing the e-commerce tools and web systems that are easy to use, that makes the interaction with enterprises sites is clear and understandable.
- Overcoming security risk issues and concerns which are exposed from enterprises customers' perception.
- Overcoming performance risk issues to resolve the enterprises customers fears for a possibility of the outflow of personal information.
- Assuring the creditability of e-commerce enterprises' services, so that no money will be lost.
- Producing E-commerce services that are free of cost.

There is a need for enterprises to develop systems for measuring key indicators that influence the way the enterprise adds value by using e-commerce services. In addition develop a system using tools such as dash boards for measuring key indicators of the level of perceived security and performance risk that encounter e-commerce system. E-commerce features and functions that promote usefulness, ease of use, security and performance risk issues need to be demonstrated by providing successful role models. The success is directly related to developing a clear mission, defining e-commerce adoption values, promoting e-commerce adoption awareness by enterprises and customers, and performing continuous e-commerce process enhancement.

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