

A MODEL FOR E-COMMERCE ADOPTION BY SMALL
AND MEDIUM-SIZED ENTERPRISES IN ALGERIA

BY

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ABSTRACT

Small and Medium-sized Enterprises (SMEs) are regarded as the backbone of the growth of the world economy. They had recently experienced rapid growth and improved their business activities in terms of customer numbers and revenue expansion when they began using e-commerce in their business. Although there is a growing interest in e-commerce, its use is still insufficient in Algeria. SMEs show a little acceptance of e-commerce in their business processes. Consequently, e-commerce has not yet found its place in Algeria, since it has not achieved the desired start as an approved means of trade. The main objective of this study is to identify the direct, indirect and mediating factors that have prevented SMEs from adopting e-commerce in Algeria and develop a model to be adopted. To obtain a clear vision on the subject of adopting e-commerce in Algeria, a preliminary study was established with semi-structured interviews that were conducted with 7 SME managers. Then, the conceptual model was developed through the models and theories which are among the most frequently applied theoretical models on the adoption of e-commerce in developing countries. These models are Unified Theory of Acceptance and Use of Technology (UTAUT), Technology Organisation Environment (TOE), and Perceived eReadiness Model (PERM) as well as from the results of the preliminary study. This research uses the quantitative research method, where a survey responded by 315 SMEs in Algeria. The research hypotheses were examined, and the proposed research model was validated through Structural Equation Modelling (SEM) using AMOS software. The main findings of the present study comprise some key factors that have a significant effect on e-commerce adoption which are competitive pressure, delivery systems, necessary guidance and assistance, buying habits, enterprise financial resource, human resources, and trust in the state system and IT skills. The significant effects were mediated by three variables which are awareness, fear of risk in e-commerce, and the intention to adopt e-commerce. At the same time, there are three non-significant factors which are government e-readiness, bank e-readiness and technology resources. Besides, the measures of goodness-of-fit indices GOFI indicate that the conceptual model revised is a fit model for e-commerce adoption by SMEs in Algeria. This model would be provided useful information for SMEs, policymakers, and academics.

خلاصة البحث

ABSTRACT IN ARABIC

تعتبر الشركات الصغيرة والمتوسطة (SMEs) بمثابة العمود الفقري لنمو الاقتصاد العالمي. ولقد شهدت مؤخرًا نموًا سريعًا وقام أصحابها بتحسين أنشطتهم التجارية من حيث عدد العملاء، وزيادة الإيرادات، وبالأخص عندما لجأوا إلى اعتماد التجارة الإلكترونية واستخدامها في أعمالهم. ومع هذا الاهتمام المتزايد بالتجارة الإلكترونية على مستوى العالم مازال استخدامها غير كافٍ في الجزائر. تظهر الشركات الصغيرة والمتوسطة قبولاً بسيطاً للتجارة الإلكترونية في عملياتها التجارية. وبالتالي، لم تجد التجارة الإلكترونية مكانها بعد في الجزائر، لأنها لم تحقق البداية المرجوة كوسيلة تجارة معتمدة. الهدف الرئيسي من هذه الدراسة هو تحديد العوامل المباشرة وغير المباشرة والوسيلة التي حالت دون تبني الشركات الصغيرة والمتوسطة للتجارة الإلكترونية في الجزائر وتطوير نموذج يتم اعتماده. للحصول على رؤية واضحة حول موضوع تبني التجارة الإلكترونية في الجزائر، تم إجراء دراسة أولية بمقابلات شبه منظمة أجريت مع 7 مديري مؤسسات صغيرة ومتوسطة. بعد ذلك، تم تطوير النموذج المفاهيمي من خلال النماذج والنظريات التي تعد من بين النماذج النظرية الأكثر تطبيقاً بشأن اعتماد التجارة الإلكترونية في البلدان النامية. هذه النماذج هي النظرية الموحدة لقبول واستخدام التكنولوجيا (UTAUT) وبيئة منظمة التكنولوجيا (TOE) ونموذج الجاهزية الإلكترونية المتصور (PERM) وكذلك من نتائج الدراسة الأولية. يستخدم هذا البحث المنهج الكمي من خلال استبيان مدروس وذلك لدراسة العوامل المباشرة وغير المباشرة لاعتماد التجارة الإلكترونية، حيث استجابت دراسة استقصائية لـ 315 مؤسسة صغيرة ومتوسطة في الجزائر؛ تم فحص فرضيات البحث والتحقق من صحة النموذج البحثي المقترح من خلال نمذجة المعادلات الهيكلية (SEM) باستخدام برنامج التحليل الإحصائي المتقدم AMOS.

تشتمل النتائج الرئيسية لهذه الدراسة على بعض العوامل الأساسية التي لها تأثير كبير على اعتماد التجارة الإلكترونية وهي: الضغط التنافسي، وأنظمة التسليم، والتوجيه والمساعدة اللازمين، وعادات الشراء، والموارد المالية للمؤسسة، والموارد البشرية، والثقة في نظام الدولة، ومهارات تكنولوجيا المعلومات. وذلك من خلال ثلاث متغيرات وسيطة وساطة كلية وهي: الوعي بفوائد التجارة الإلكترونية، والخوف من مخاطرها، والعزم على اعتمادها. في نفس الوقت، هناك ثلاثة عوامل غير مهمة وهي الجاهزية الإلكترونية الحكومية، والجاهزية الإلكترونية للبنوك والموارد التكنولوجية. إلى جانب ذلك، تشير مقاييس مؤشرات جودة الملاءمة GOFI إلى أن النموذج المفاهيمي المعدل نموذجاً مناسباً لاعتماد التجارة الإلكترونية من قبل الشركات الصغيرة والمتوسطة في الجزائر. هذا النموذج سيوفر معلومات مفيدة للشركات الصغيرة والمتوسطة وواضعي السياسات والأكاديميين. لأنه يعطي رؤية واضحة لممارسات التجارة الإلكترونية لقادة الشركات الصغيرة والمتوسطة ويوضح العوامل والمتغيرات الحاسمة التي يجب مراعاتها عند تنفيذ نظام التجارة الإلكترونية.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

HOUACHE HASSEN

Signature

A handwritten signature in blue ink, consisting of a vertical line on the left, a horizontal line across the middle, and a vertical line on the right with a small flourish at the end.

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LIST OF ABBREVIATIONS

ADSL	Asymmetric Digital Subscriber Lines
AEC	Adoption of E-commerce
AMOS	Analysis of Moment Structures
API	Application programming interface
ATM	Automated Teller Machine
AVE	Average Variance Extracted
B2B	Business-to-Business
B2C	Business-to-Consumer
CCP	Compte Chèque Postal (postal check account)
CEO	Chief Executive Officers
CERIST	Centre de Recherche sur l'Information Scientifique et Technique
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CIB	Corporate & Institutional Banking
CR	Composite Reliability
CRM	Customer Relationship Management
CSF	Critical Success Factors
DF	Degree of Freedom
DOI	Theory of the Diffusion of Innovation
DVD	Digital Video Disc
EBR	Bank eReadiness
ECP	Competitive Pressure
EDI	Electronic Data Interchange
EDS	Delivery systems
EGR	Government eReadiness
EM	Estimation Maximization
EMF	Market forces eReadiness
ERP	Enterprise Resource Planning
ESF	E-commerce success factor
FC	Facilitating Conditions
GOF	goodness-of-fit
IAW	Awareness
ICT	Information and Communication Technologies
IFI	Incremental Fit Index
IIS	IT Skills

IS	Information Systems
IT	Information Technologies
IUE	Intention to Use E-commerce
MAR	Missing Randomly
MCAR	Missing Completely Randomly
MIT	Massachusetts Institute of Technology
ML	Maximum Likelihood
MNAR	Missing Not Random
MPCSF	Multi-Perspective Critical Success Factors
MSV	Maximum Shared Squared Variance
MVA	Missing Value Analysis
OEF	Enterprise financial resource
OHR	Human resources
OM	Organization Mission
OPEC	Organization of Petroleum-Exporting Countries
PC	Personal Computer
PCFI	Parsimony comparative fit index
PEOU	Perceived Ease Of Use
PERM	Perceived E-Readiness Model
PGFI	Goodness-of-Fit index
PKI	Public Key Infrastructures
PNFI	Parsimony Normed Fit Index
POER	Perceived Organisational eReadiness
PSQ	Perceived Service Quality
PU	Perceived Usefulness
RBV	Resource-Based View of the firm
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SATIM	Société d'Automatisation des Transactions Interbancaires et de Monétique
SBH	Buying habits
SBO	Scope of Business Operations
SEM	Structural Equation Modelling
SFR	Fear of risk in e-commerce
SME	Small and Medium Enterprises
SMN	Social media networks
SNG	Necessary guidance and assistance
SPSS	Statistical Package for Social Sciences
SRMR	Standardised Root Mean Square Residual
SSL	Secure Socket Layer

TAM	Technology Acceptance Model
TLI	Tucker Lewis Index
TOE	Technology Organisation Environment
TTR	Technology Resources
TTS	Trust in the state system
US	United States
UTAUT	Unified Theory of Acceptance and Use of Technology
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The Internet explosion coincided with the new millennium. Since then, its uses have gone out from simple applications such as browsing and searching to more developed ones in all life sectors and facilities such as commercial transactions, financial transfers and so on. In a short period of time, it was able to integrate societies and change many of their life aspects and values. With the help of the Internet, time and space have been compressed. It has allowed organizations to expand beyond regional borders (Agwu & Murray, 2015). The last few years have seen a rise in the volume of electronic commerce around the world as a result of the spreading use of information and communication technologies (ICT). Compared to traditional business, the Internet and e-commerce have provided consumers with more benefits and different choices of both products and services. In spite of their size, traditional companies must change their mind about selling products and services through the Internet since it has become a need rather than a luxury. Entrepreneur managers, who are not ready to use e-commerce, put themselves at risk of competition and maintenance of their position in the marketplace (Hisrich & Ramadani, 2017). In the contemporary world, access to the Internet is a must for companies of all sizes because that is where customers are at present. The Algerian society has opened up to the world of new information and communication technologies. In addition, access to the Internet has become easier than ever (Rassim & Sonia, 2017). However, most of those using the Internet for advertising and presenting their goods and services are utilizing email communication to get in touch with their suppliers and customers; but only a few of them offer products and services through the network. Therefore, e-commerce has not started yet in Algeria. Thus, Algerian SMEs remain far from

the global development in this area (Zahra, Wassila, & Amine, 2017). Moreover, Algeria is living in a transitional stage from a directed economy¹ to a market economy², especially after the oil price dropping and the economic crisis. This situation has forced the government to adopt very large-scale and fast reforms to get a more diversified economy and to encourage business competitiveness to be an alternative to the hydrocarbon-based economy. E-commerce is one of the significant sectors that Algeria must encourage people to invest-in (Khalifa, 2018). Since the infrastructure is available, but it needs to be more technologically advanced. As cited by Ben Saci (2017), the electronic payment would be launched, and the e-commerce legislation project would be presented by the government by the end of 2016. However, there is a weakness in the use of bank cards and a delay in the rehabilitation of electronic payment systems. So far Moreover, the Algerian banks have been kept away from these developments (Fouatmiya, 2018). Though e-commerce in Algeria is still in its early phases compared to other developing countries, an excellent and probable rapid and sustainable growth is seen in the coming years.

According to Fatima Z. & Wassila L., (2017), nowadays, e-commerce uses various advanced technologies such as electronic money transfer, supply chain management, online transaction processing and marketing, electronic data exchange and inventory management systems. It also offers numerous privileges such as low financial cost, potential income, international business etc. That makes us wonder about how and to what extent e-commerce can promote and enhance the Algerian economy in the future. This is undoubtedly going to help reduce the widening gap between the Algerian and the developed countries economy. The accelerating global development of e-commerce and the increasing international trend to

¹ It is an economic system in which economic decisions related to resource allocation, production, investment and pricing are under the control of the government or some other official body.

² It is an economic system in which economic decisions and pricing of goods and services are guided by the interactions of individuals and companies in the country.

spread the information and communication technologies (ICT) applications is driving Algeria to follow the path of this type of commerce (electronic commerce) without a moment of hesitation (Falak C., 2018).

1.2 STATEMENT OF THE PROBLEM

Small and Medium Enterprises (SMEs) are considered as the locomotive of the growth of the world economy since they are at the basis of more than 80% of a nation's economic growth and of more than 90% of its entire businesses. They have recently experienced a rapid growth and improved their business activities in terms of the number of customers' expansion and revenue growth when they started using e-commerce in their business. Although there is a growing interest in e-commerce, its use is still insufficient in Algeria (Msitfa H., 2017; Falak C., 2018).

Moreover, based on a preliminary study, e-commerce has not yet found its place in Algeria as it has not been approved as a means of trade. There is a significant percentage of resistance against e-commerce adoption in Algeria (Falak C., 2018). In other words, SMEs show a little acceptance of e-commerce in their business processes because international e-commerce in Algeria is weak or almost non-existent. So far, Algeria has not been able to keep pace with its neighbours Morocco and Tunisia (Khalifa, 2018). Therefore, the actual e-commerce has not started yet in Algeria and remains just a dream waiting to be achieved. Besides, there are minimal studies about the reality of e-commerce in Algeria, and the majority of which are in Arabic. Although, they dealt with the subject in terms of economics and management, they did not report a model for the adoption of e-commerce as well as the factors that have an impact on it. As a result of the preliminary study, the critical issue is that it is hard to find a robust model of e-commerce to be adopted in Algeria because of the Algerian characteristics and the lack of studies on the models to be adopted.

The traditional market is more prevalent than e-commerce, and the sellers and consumers prefer paying cash. SMEs have a great apprehension in dealing with banks to avoid taxes. Thus, there is a fear of e-commerce risks and lack of awareness about its benefits.

1.3 RESEARCH OBJECTIVES

The main objective of this study is to recognize the factors that prevented SMEs from adopting e-commerce in Algeria and develop a model to be adopted. Hence, the objectives of this research are:

1. To recognize the relationship between the variables namely environmental, organizational, technology, individual, trust and security, social and culture and the adoption of e-commerce in Algeria
2. To investigate the role of awareness, fear of risk in e-commerce and intention to adopt e-commerce as the mediator variable in the adoption of e-commerce.
3. To examine the role of the awareness, fear of risk in e-commerce and intention to adopt e-commerce as mediators between the variables namely environmental, organizational, technology, individual, trust and security, social and culture and the adoption of e-commerce in Algeria.

1.4 RESEARCH QUESTIONS

The questions of this research are as follows:

1. What is the relationship between the variables namely environmental, organizational, technology, individual, trust and security, social and culture, and the adoption of e-commerce in Algeria?
2. What is the role of the intention of adopting e-commerce as a mediator between booth awareness, fear of risk in e-commerce and the adoption of e-commerce in Algeria?

3. What is the relationship between the variables namely environmental, organizational, technology, individual, trust and security, social and culture, and the adoption of e-commerce via the awareness, fear of risk in e-commerce and intention to adopt e-commerce?

1.5 RESEARCH OBJECTIVES AND QUESTIONS MAPPING

Table 1.5.1 Research Objectives and Questions Mapping

Research Objectives	Research Question
RO1: To recognize the relationship between the variables namely environmental, organizational, technology, individual, trust and security, social and culture, and the adoption of e-commerce in Algeria.	RQ1: What is the relationship between the variables namely environmental, organizational, technology, individual, trust and security, social and culture, and the adoption of e-commerce in Algeria?
RO2: To investigate the role of awareness, fear of risk in e-commerce and intention to adopt e-commerce as the mediator variable in the adoption of e-commerce.	RQ2: What is the role of the intention of adopting e-commerce as a mediator between booth awareness, fear of risk in e-commerce and the adoption of e-commerce in Algeria?
RO3: To examine the role of the awareness, fear of risk in e-commerce and intention to adopt e-commerce as mediators between the variables namely environmental, organizational, technology, individual, trust and security, social and culture, and the adoption of e-commerce in Algeria.	RQ3: What is the relationship between the variables namely environmental, organizational, technology, individual, trust and security, social and culture, and the adoption of e-commerce via the awareness, fear of risk in e-commerce and intention to adopt e-commerce?

1.6 IMPORTANCE OF THE STUDY

Small and medium-sized enterprises SMEs generally have limited access to information and minimal capital. However, despite the limitations, they play a significant role in contributing to the economic development and employment opportunities. There is a need to study more about the elements that affect their decision to adopt e-commerce. Although many studies about e-commerce adoption by SMEs in developing countries have been done, only a few can be found in the Algeria. Thus, this study tries to give a deeper understanding of e-commerce adoption in developing countries that have not yet started adopting it integrating