Factors Affecting Egyptian Small and Medium Sized Owners' Intentions to and Adoption of E-business

Abstract:

The revolution in communications and information technology has played an important role in changing people's day to day life, this in fact has reflected on the way people performing business. Nowadays, modern business is being shifted from paper-based, and people-intensive systems toward electronic-based procedures using new communication tools.

It is widely known that the adoption of new technology is not established from scratch, it is a product of cumulative factors and actions, that can be treated as a planned behaviour. In an analysis to investigate the intentions towards adoption of e-business as an entrepreneurial activity, this study relies on theoretical framework of Ajzen theory of planned behaviour. According to this theory human action is guided by three kinds of beliefs: beliefs about the future outcomes of the behaviour (behavioural beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and finally beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of these factors (control beliefs).

Purpose- the purpose of this paper is to explore and explain the factors that determine the intention for adopting e-business among small and medium sized firms in Egypt.

Design/Methodology/ Approach- A review of the literature on e-business, technology adoption and entrepreneurial orientation and behaviour. Develop an integrated model linking endogenous factors and exogenous factors that determine intention of adopting e-business.

Originality/ Value: The paper is among the first studies to examine factors enabling/ hindering the adoption of e-business among small and medium sized firms in Egypt.

Keywords: E-business, Egypt, Technology adoption, Entrepreneurial Behaviour, Communication Technology.

Paper Type: Research paper.

1. Introduction:

SMEs are a vital component for the economic success of the UK given their importance in terms of numbers, employment and revenue generation. According to the Small Business Service (SBS, 2010), 99.9% of all enterprises in the UK are SMEs and they account for about 45% of the sales turnover generated in the UK. According to Malaysian (SMEinfo, 2011), it is comprising over 98% of total establishments and contributing to more than 65% of employment as well as over 50% of the gross domestic product. In OECD; SMEs account for over 95% of enterprises and 60%-70% of employment, and generate a large share of new jobs in OECD economies. In New Zealand, SMEs represents a significant component of the economy output (35%), number of firms (96%) and number of employees 41% (Sarkar, 2008)

Despite the importance of small and medium sized firms, there is no consensus between researchers, practitioners and governmental organisations on what small and medium sized firms are?

With this regard, it has been found that small and medium sized enterprises (SMEs) are defined in different ways around the world. Table 1 summarises the main criteria used to define SMEs in some countries.

Table (1) Criteria of Defining SMEs from Different Countries

Country	No. of Employees	Other Criteria
UK	▪ Small-sized company not more than 50 employees ▪ Medium-sized company not more than 250 employees	▪ Small company is one that has a turnover of not more than £6.5 million, a balance sheet total of not more than £3.26 million. ▪ Medium-sized company has a turnover of not more than £25.9 million, a balance sheet total of not more than £12.9 million
EU	▪ Small-sized company not more than 50 employees ▪ Medium-sized company not more than 250 employees	▪ Small company is one that has a turnover of not more than €10 million, a balance sheet total of not more than €10 million. ▪ Medium-sized company has a turnover of not more than €50 million, a balance sheet total of not more than €43 million
USA	▪ Not more than 500 employees for manufacturing and mining industries ▪ Not more than 100 employees for wholesale industries	▪ $7 million of annual receipts for most retail and service industries ▪ $33.5 million of annual receipts for most general & heavy construction industries ▪ $14 million of receipts for all special trade contractors ▪ $0.75 million of receipts for most agricultural industries
Egypt	▪ Small company not more than 50 employees ▪ Medium company not more than 100 employees	▪ Paid in capital not less than 50000 and not more than one million Egyptian pound for small company ▪ Paid in capital not less than one million and not more than 5 million Egyptian pound for medium company

Source: Adapted by the author from different sources

Despite the importance of SMEs in world economy, little research has been made done to investigate the factors of e-business implementation in SMEs (Lee and Kim, 2006; Sarkar, 2008). The literature is still suggesting the need for advancing understanding of the key factors experienced in different contexts around the world (Mpofu, 2011).

2. E- Business Definition, Benefits and Barriers

2.1. E-business Definition

E-business differs from previous traditional technological innovation, such as a management information system MIS and electronic data interchange (EDI), which are used to improve the efficiency of IS functions and supports batch exchange of structured procurement documents (Iacovou et al., 1995). Also, E-business represents a new way to integrate Internet-based technologies with core business potentially affecting the whole business. It is made up of multiple software processes that are designed for different reasons and deliver different degrees of benefit (Roberts and Toleman, 2007). Therefore, There are a number of definitions of e-business; that imply conducting business processes through electronic media. In this line, E-business is the term used to describe the information systems and applications that support and drive business processes, mostly using web technologies (Meckel, et al. 2004). It is worth noting that e-business is not just about e-commerce transactions or about buying and selling over the Web, but it is the overall strategy of redefining old business models with the aid of technology to maximize customer value and profits.' (Kalakota and Robinson, 2000). The definition adopted taken in this paper covers all forms of business process conducting. It is a more generic term than e-commerce because it refers to not only buying and selling but also servicing customers and collaborating with business partners.

2.2. E-Business benefits:

Despite the debate about on the impact of ICT and internet use on firm performance (see for example Ruddock, 2006; Welling and White, 2009; Ahuja, et al. 2010) ICT and internet usage offer a wide range of benefit to for firms such as (Gunasekaran et al, 2001; Dehlin and Olofsson, 2008):

- ICT make communication within the firm more efficient, as it allows firm to store, share and disseminate the information.
- Internet and e-commerce reduce the transaction costs and increase the speed and reliability of transaction.
- Information collected about customer needs can be used for product development or innovation.

2.3. Barriers of ebusiness adoption

According to Marasini,et al, (2010) barriers for application of internet technologies can be categorised as cultural, financial, technical, access, knowledge sharing and awareness barriers. These barriers are (Gulledge, 2002; Teo and Ranganathan, 2004; Howard et al, 2007; Johnson, 2010)

- Absence and lack of awareness of legal and regulatory systems.
- Limited diffusion of computers, high cost of Internet and lack of online payment processes directly inhibit e-commerce.
- Inadequate transportation and delivery networks, limited availability of banking services, and uncertain taxation rules indirectly inhibit e-commerce adoption.

3. Theoretical Background:

According to Molla and Lickerb, (2005) the adoption of innovation can be classified into five categories:

- Managerial imperative models, which explain innovation adoption based on decision maker attributes such as the innovativeness attributes of managers, their commitment to the innovation and IT background
- Organizational imperative; according to this school of thought the key determinants of adoption reside within the internal context of an organization. As a result, organizational characteristics such as specialization, functional differentiation, formalization, centralization, readiness, risk taking propensity, and innovativeness are major determinants of adoption.
- Technological imperative models such as diffusion of innovation (DOI) and technology acceptance (TAM) consider the complexity, compatibility, relative advantage, ease of use, usefulness attributes as key drivers of adoption
- Environmental imperative models, which focus on external influences such as external pressure from market forces, institutional forces, and the eReadiness of socio-economic forces as key environmental factors likely to affect innovation adoption.
- Interactionism imperative models assume a co-influence among the previous forces of the innovation (internal, external, managerial and environmental forces). The key benefit of interactionism model is its ability to explain why certain kinds of innovations are successful while others are not.

This section will present the key theories that explain the mechanisms of innovation (e-business) adoption.

3.1. Diffusion of Innovation Theory:

"The Diffusion of Innovation Theory was first discussed historically in 1903 by the French sociologist Gabriel Tarde (Toews, 2003) who plotted the original S-shaped diffusion curve, followed by Ryan and Gross (1943) who introduced the adopter categories that were later used in the current theory popularized by Everett Rogers" (Kaminski, 2011). Diffusion of Innovation theory identifies a large range of factors influencing adoption of innovations, which could be classified into two major sources: characteristics of the innovation itself and characteristics of the adopting organisation (Roberts & Toleman, 2007).

In the same vein Rogers defines diffusion as "the process in which an innovation is communicated thorough certain channels over time among the members of a social system" Here Rogers (2005) identified innovation, communication channels, time and social system as the maim four components of the diffusion of innovation as presented in figure (1)

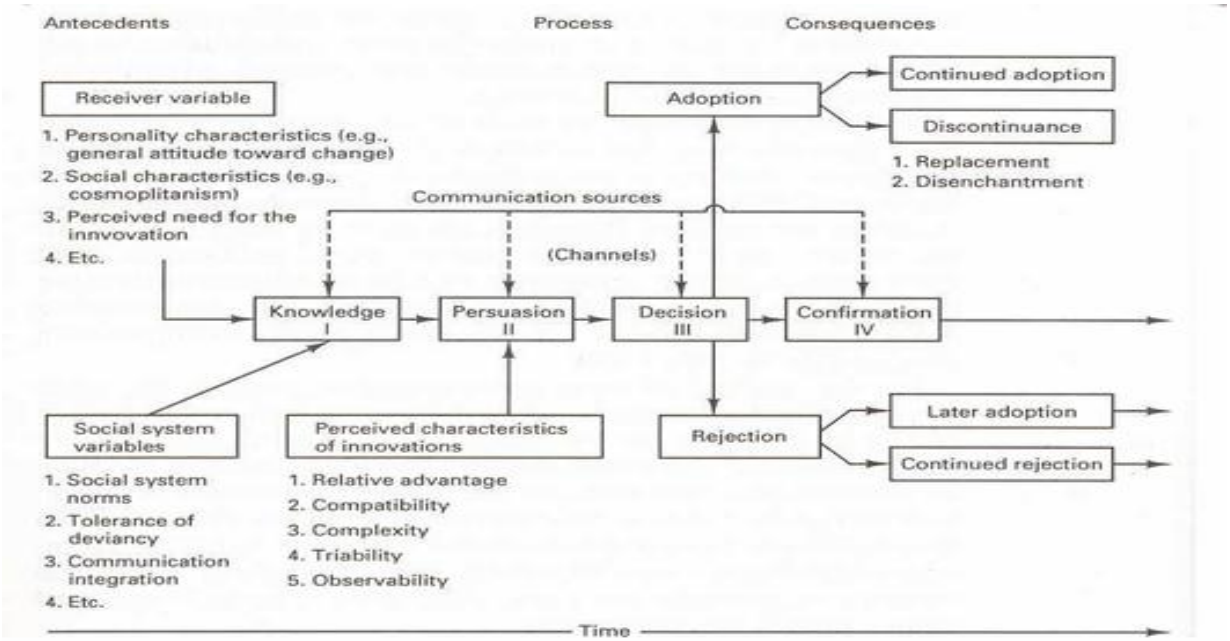
Innovation; Rogers offered the following description of an innovation: "An *innovation* is an idea, practice, or project that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 12). The speed of diffusion of innovation depend on innovation characteristics which include; observability (the degree to which the results of an innovation are visible to potential adopters; relative advantage (the degree to which the innovation is

perceived to be superior to current practice); compatibility (the degree to which the innovation is perceived to be consistent with socio-cultural values, previous ideas, and/or perceived needs; trialability (the degree to which the innovation can be experienced on a limited basis) and complexity (the degree to which an innovation is difficult to use or understand).

Communication Channels; For Rogers (2003), communication is "a process in which participants create and share information with one another in order to reach a mutual understanding" (p. 5). Rogers states that diffusion is a specific kind of communication which includes: an innovation, two individuals or other units of adoption one of them has the knowledge of the innovation while the other does not have any knowledge, and a communication channel which is the means by which messages get from one individual to another..

Time; Diffusion research considers time as an important variable in the diffusion process. Time is involved in diffusion in "(a) the *innovation-decision process,* the mental process through which an individual passes from first knowledge of a new idea, to adoption and confirmation of the innovation; (b) *innovativeness,* the degree to which an individual is relatively earlier in adopting new ideas than other members of a system; and (c) an innovation's *rate of adoption,* the relative speed with which an innovation is adopted by members of a system" (Rogers, 2003).

Social System; The social system is the last element in the diffusion process. Rogers (2003) defined the social system as "a set of interrelated units engaged in joint problem solving to accomplish a common goal" (p. 23). Rogers claimed that the nature of the social system affects individuals' innovativeness, which is the main criterion for categorizing adopters.



Source: Rogers (1995) Diffusion of innovation

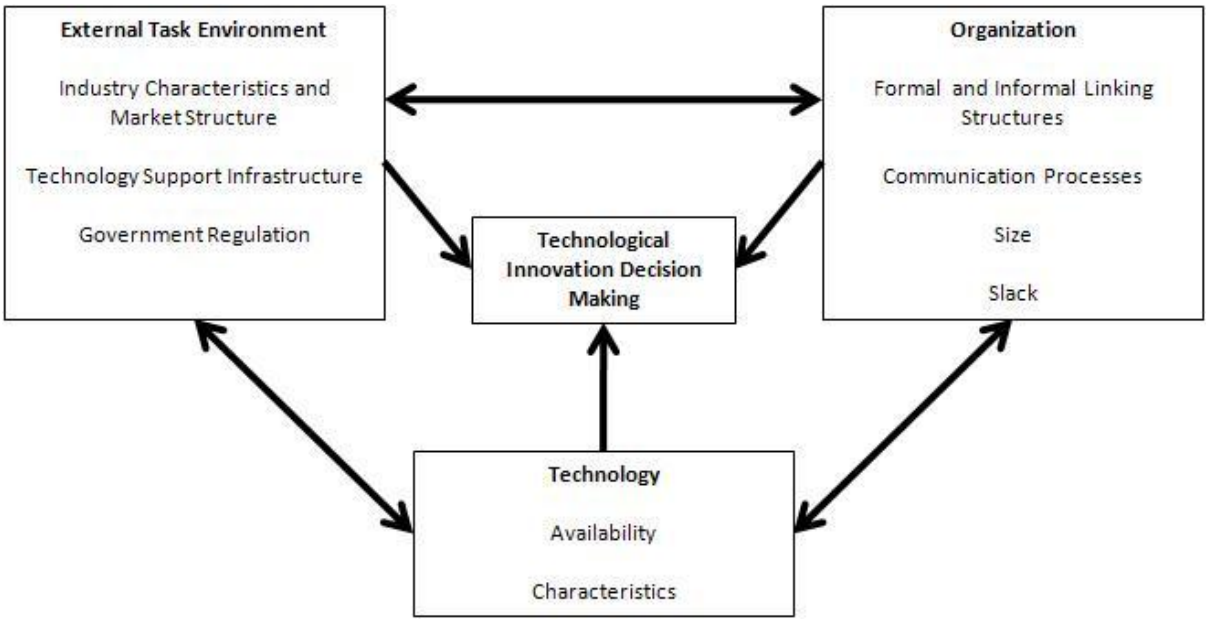
Figure (1)

Rogers' Diffusion of Innovation Model

3.2. Technology-Organization Environment Model (T-O-E):

The technology-organization environment model has been developed by Tornatzky and Fleischer (1990). The model identified three aspects of a firm's context that influence the process by which the firm adopts and implements technological innovation: *organizational context* (firm size; the centralization, formalization, and complexity of its managerial structure, the quality of its human resource; and the amount of slack resources available internally); *technological context* (existing technologies inside the firm and the pool of available technologies in the market) and *environmental context* (industry, competitors, access to resources supplied by others, and dealings with government).

This framework is consistent with the Diffusion of Innovation theory, where the individual characteristics and organisation characteristics play important role in the innovation adoption process. However, the TOE framework stresses the importance of the environment component (Oliveira and Martins, 2011)



Source: Tomatzky and Fleischer (1990)

Figure (2)

Technology, Organisation and Environment (TOE) Framework

3.3. Perception-based Technology-Organization-Environment Framework:

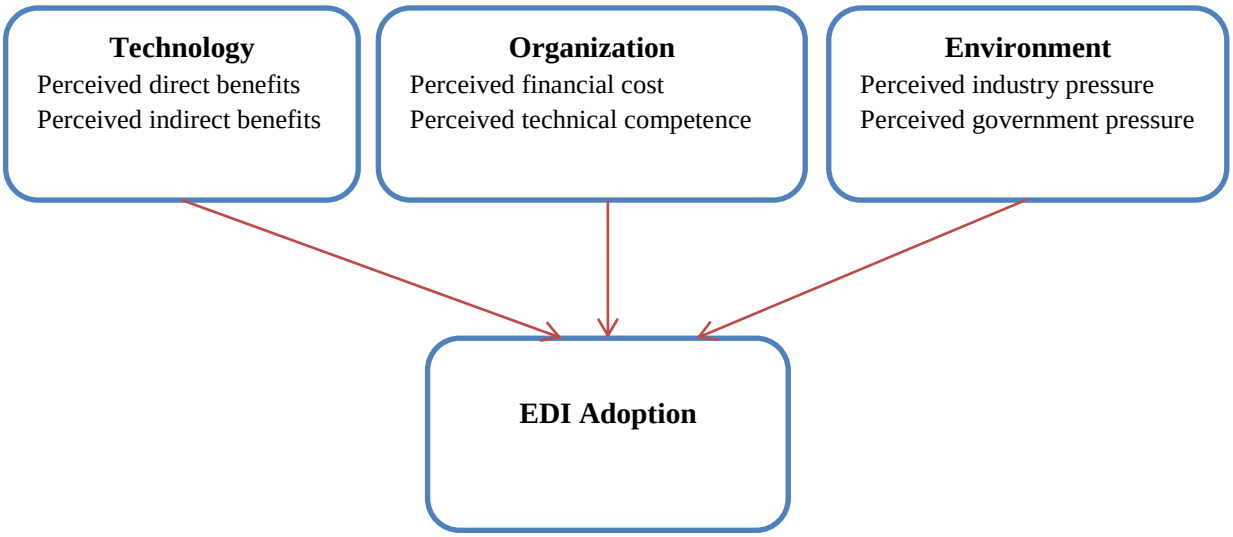
Based on the technology-organization environment model Kuan and Chau (2001) developed a perception-based model for EDI adoption in small business. There are three context of small business EDI adoption.

The *technological context* (perceived technological benefits). It refers to the degree to which EDI is perceived as providing the benefit to the organisation. This benefit has been classified into two categories: *strategic benefits* (improving the organisation image, improving

customer service, improving relationships with business partners) and operational benefits (improving data accuracy, improving security of data, improving operation efficiency, speeding up application process).

The *organisational context* (perceived organisational resources. Kuan and Chau (2001) stated that it is important to achieve gain the perceived benefits within the allocated resources. Costs and technical compatibility are two major facilitators to the adoption of EDI.

The *environmental context* (perceived environmental pressure); the company may adopt a technology due to pressure from business partners and/or competitors.



Source: Kuan and Chau (2001)

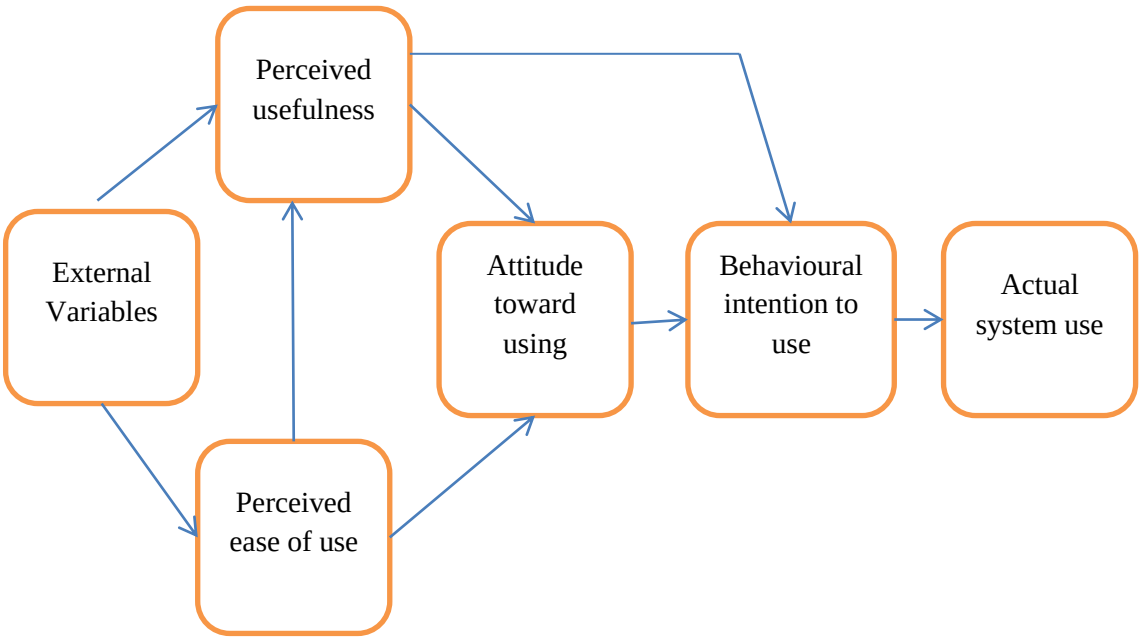
Figure (3)

A perception-based Model for EDI Adoption in Small Business

3.4. Technology Acceptance Model:

Technology Adoption Model has been developed by (Davis, 1985, 1989) it is an individual level adoption model, rooted in the Theory of Reasoned Action (TRA). The TAM, identified two important independent variables of actual use of technology which are: *Perceived ease of use*, defined as 'the degree to which a person believes that using a particular system would be free of effort; and *Perceived usefulness*, defined as 'the degree to which a person believes that using a particular system would enhance his or her performance. Many studies have investigated the usefulness of TAM as a foundation base to explain the user acceptance of e-business (Porter and Donthu, 2009; Ha and Stoel 2009; Tong, 2010).

Most important extension of TAM was made by Venkatessh and Davis (2000) by adding subjective norm construct and this modified model is known as TAM2.



Source: Davis (1985)

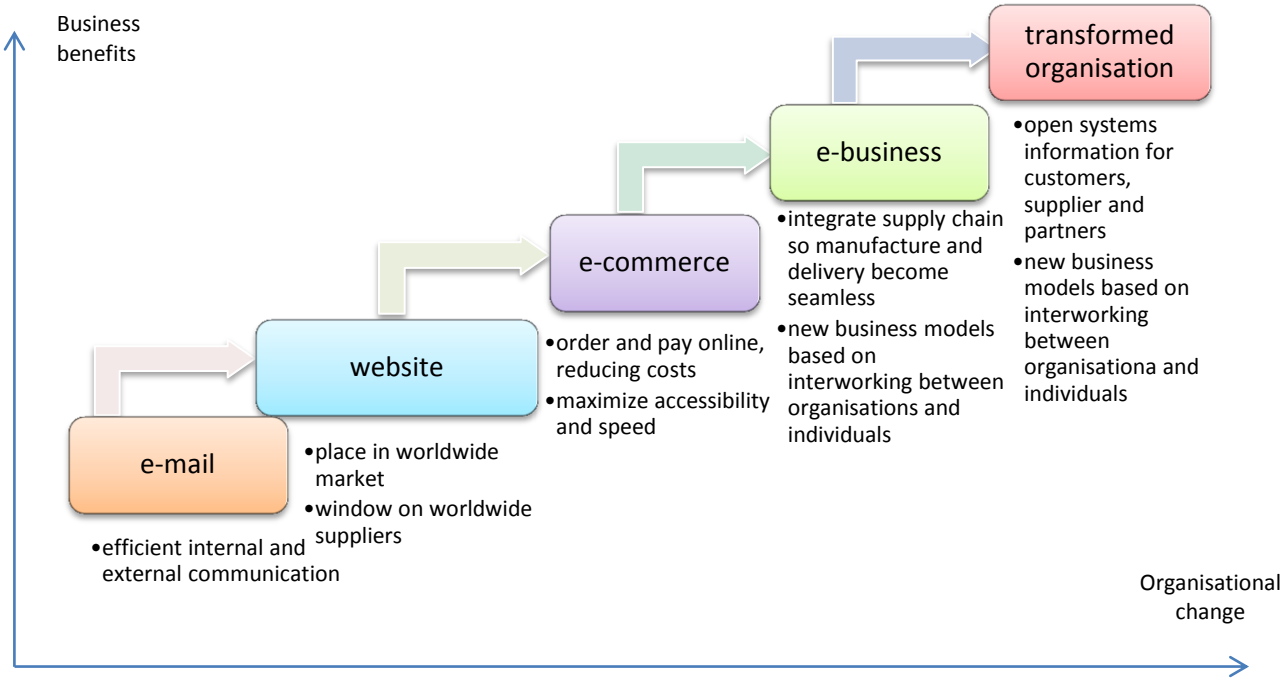
Figure (4)

Technology Acceptance Model (TAM)

3.5. Stage Models of ICT adoption in SMEs

Building on the work of DT (2001) and Nachira (2002) Zappala and Gray (2006) suggested that ICT adoption happens in incremental stages driven by ICT uptake, business benefits and organisational change. According to Zappala and Gray (2006) the key decision-makers need to be personally ready for ICT adoption that can take them to the next stages in the process of adoption.

The adoption ladder presented in figure (5) has been criticised for being too linear and shows no indication of the dynamic processes that drive firms from on stage to the other (Mpofu, et al 2011).



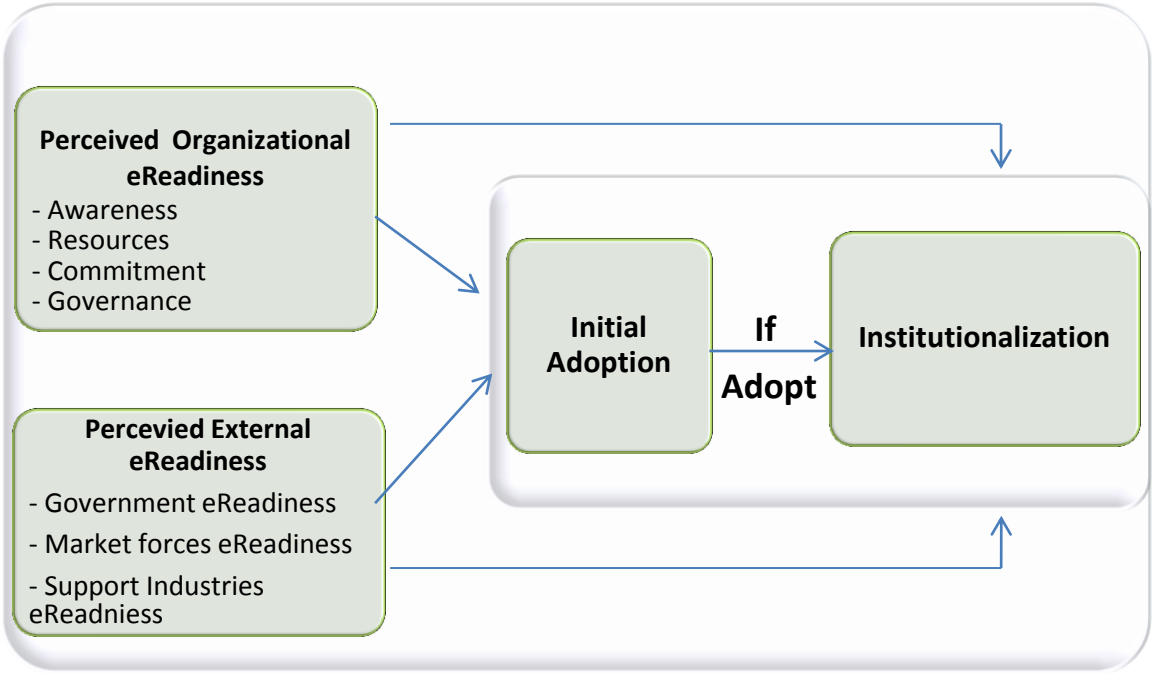
Source: Zappala and Gray (2006)

Figure (5)
Stage Model of ICT adoption in SMEs

3.6. Perceived e-Readiness Model

Building on reality that e-business in developing counties differs greatly from developed countries. Developing countries often lack the necessary financial, legal, and physical infrastructures for the development of e-business (Montealegre, 1996; Lehmann, 1996; Molla and Licker 2005). Based on interactionism imperative as a theoretical root (Molla & Licker, 2005) suggested that managerial, internal organisational and external contextual issues can provide meaningful predictors of eCommerce adoption in developing countries. They proposed the concept of perceived eReadiness to represent managers' assessments of the four adoption contexts. The ''perceived eReadiness'' has been defined as an organization's assessment of the eCommerce, managerial, organizational, and external situations in making decisions about adopting eCommerce.

They proposed the Perceived eReadiness Model which identify two constructs Perceived Organizational eReadiness (POER) and Perceived External eReadiness (PEER) as main determinants of e-commerce.



Source: Molla and Licker, 2005

Figure (6)

Perceived e-Readiness Model

4. Literature Review

Over the last two decades several studies have investigated the previous, table (2) present some of these studies along with the key factors that has been studies.

Table (2)

Some Empirical Studies that Investigate the Main Factors

Affecting the Adoption of Innovation

Mpofu, et al (2011)	▪ Owner/ manager characteristics which includes perceived benefits, computer literacy, assertiveness, perceived control, subjective norm, mistrust of it industry and lack of time. ▪ Small firm characteristics which includes organizational readiness, external pressure to adopt, customer supplier dependency, structural sophistication of the firm, size, sector, status and information intensity. ▪ Return on investment
Oliveira & Martins (2010)	▪ Technology context which includes technology readiness and technology integration. ▪ Organisational context which includes firm size, perceived benefits and perceived obstacles. ▪ Environmental context which includes internet penetration and competitive pressure

Johnson (2008)	▪ Risk perception ▪ Knowledge deficits ▪ Trust ▪ Firm size ▪ Organisational readiness
Sarkar, A. (2008)	▪ Organizational factors which includes customer interaction, user involvement and organizational image. ▪ Managerial factors which includes top management support and CEO's IT knowledge. ▪ Technical factors which includes security, cost benefit and perceived advantage ▪ Environmental factors which includes competition in industry and external IT consultants
Golding, et al (2008)	▪ Adoption attributes which includes relative advantage of innovation, compatibility, complexity, trialability and observability ▪ Organizational attributes which includes size and industry ▪ Managerial attributes which includes age and attitude
Gibbs et al 2007	▪ Government role which includes national policies, strategies and support programmes, taxes and tariffs, regulatory frameworks, subsidies, support infrastructure. ▪ Environmental attributes which includes business environment, suppliers, buyers, competitors, security, peace and stability ▪ Owner/ managerial attributes which includes key decision makers support and attitude, perceived benefits, computer literacy, assertiveness, perceived control, mistrust of ICT industry, lack of time, age and cultural background, ICT and business qualification, skills and experiences ▪ Organisational attributes which includes organisational readiness, business size, sector, type, ICT expertise, customer- supplier dependency, business structural sophistication, information intensity, access to financial support and other resources. ▪ Adoption attributes which includes perceived usefulness and perceived ease of use ▪ Social networks which includes network types, size, effects, externalities and density.
Zhu and Kraemer (2005)	▪ Technological context which includes technology competence. ▪ Organisation context which includes firm size, international scope and financial commitment. ▪ Environment context which includes competitive pressure and regulatory support.

Molla and Licker (2005)	▪ Perceived organizational eReadiness which includes awareness, commitment, human resources, technological resources, business resources, governance ▪ Perceived external eReadiness which includes government eReadiness, market forces eReadiness, market forces eReadiness, supporting industries eReadiness.
Dholakia & Kshertri (2004)	▪ Internal factors such as firm size, self-efficacy, past experience with related technologies, and past use of marketing media ▪ External factors which includes perceived competitive pressure
Srinivasan, et al (2002)	▪ Technological opportunism (firm awareness of changes in their environment) ▪ Institutional pressures comprise stakeholders' pressures and competitive pressure. ▪ Complementary assets such as previous experience with computers
Kwon & Zmud (1987)	▪ Characteristics of user community which includes education, job tenure and resistance to change, ▪ Organisation characteristics which includes centralisation, formalisation, and specialisation ▪ Characteristics of the technology being adopted (complexity) ▪ Characteristics of the task to which the technology is applied which includes task autonomy, variety, and uncertainty ▪ Organisational environment which includes uncertainty and interdependence

Source: Adapted by the author from different sources

5. Analysis of the eReadiness in the Egyptian Market

El-Nawawy and Ismail (1999) in their study concerning the basic deterrents of implementing e-commerce in Egypt stated that the main obstacles to adopt e-business in Egyptian market include lack of knowledge and awareness about benefits of e-commerce, current un-preparedness of SMEs to adopt e-commerce as a serious business concept, insufficient exposure to IT products and services, language barriers and lack of staff with IT capability.

Recent survey by Arab Advisors Group revealed that 34.6% of adult Internet users in Egypt use e-commerce (including bill payments). The Arab Advisors Group estimates the number of Egypt Internet users who utilize e-commerce to be around 2.36 million which is around 3% of the total population in Egypt. Despite of the rapid growth of the internet users in Egypt during the last decade as the number of internet users increased from less than 1% in 2000 to more than 21% in 2009, the internet penetration is still relatively low and the vast majority of them are located in urban area.

Table (3)

Internet Usage in Egypt

Year	No. of Users	% to Population
2000	450,000	0.7%
2006	5,100,000	7.0%
2008	10,532,400	12.9%
2009	16,636,000	21.1%

6. Development of Proposed Framework

Since e-business refers to the use of Internet-based applications for computing and communications to manage intra - and interorganizational business processes, it was necessary to view e-business diffusion from both internal and external perspectives. (Lina & Linb, 2008). Based on the above presented theoretical frameworks and literature review and pilot study interviews with ten small and medium sized owners the following framework has been proposed for further investigation through conducting

The proposed model specifies that factors facilitating or impeding e-business adoption as entrepreneurial behaviour could be classified into two main categories: those that are related to the management of the organization (organizational context) and those external factors that lie beyond the control of the management.

The Dependent Variable

The dependent variable in the conceptual model is the business' intent to and adoptions' degree of e-business in SMEs. The business' intention of adoption has been measured by the availability of concert plan to implement e-business practices.

The Independent Variables

Internal Context:

Firm size; the exiting literature has proposed a positive relationship between firm size and intention to adopt e-business (Damanpour, 1992; Zhu et al, 2002; Wu et al 2003; Taylor 2003). Firm size has been seen as an adoption facilitator; larger firms tend to have more slack resources which enable them to buy new technology and be more capable to bear the high risk associated with new technology (Golding et al, 2008).

Firm technological competence; Technology competence has been acknowledged as an important factor for successful e-business adoption (Grover, 1993; Helfat, 1997; Mehrtens et al., 2001; Zhu et al, 2002). It has been claimed that IT infrastructure along with employees'

knowledge of using these technologies and executives' knowledge of managing online selling and procurement enable Internet-related businesses (Mata et al 1995; Zhu and Kraemer 2005; Lin and Lee, 2005; Zhu et al, 2006). According to (Bandiera and Rasul 2002; Zappala and Gray 2006)

Perceived benefits and risk; Perceived benefits such as improve quality of information (Kaplan and Sawhnery, 2000); improve competitiveness (Harindranath, 2008; Pavic et al 2007) improved relationship with business partners (Zhu and Kraemer, 2005) motivate firms to adopt e-business (Golding, et al, 2008). As Sarkar (2008) stated that the major reasons behind implementing e-commerce were to improve speed and ease of transactions, increase in sales, to reach new customers/markets, larger audience, and to gain competitive advantage. In the other hand the perceived risk has been seen as a dominant factor that affect organisations' decision to adopt new technology (Howard et al 2006; Archer et al, 2008; Teo et al 2009; Johnson et al 2010).

Compatibility; The degree to which an innovation is perceived as being compatible with existing beliefs, experiences and needs of potential adopters have a great effect on the firm decision to adopt e-business (Golding et al 2008).

Decision maker characteristics; Previous research suggested that managers/owners are key influence in determining use of e-business in SMEs. It has been argued that the education and professional background of decision maker have proven to play a key role in e-business adoption (Braun, 2004). Martin and Margi (2003), Zappala and Gray (2006) and Beckinsale and Ram 92006) found that manager/owner of SMEs that adopt e-business tend to be more entrepreneurial, innovative and risk takers. In this regard Gray (2006) suggested that SMEs owners/ managers with technical and vocational qualifications are more likely to engage in more innovation activities that include e-business adoption.

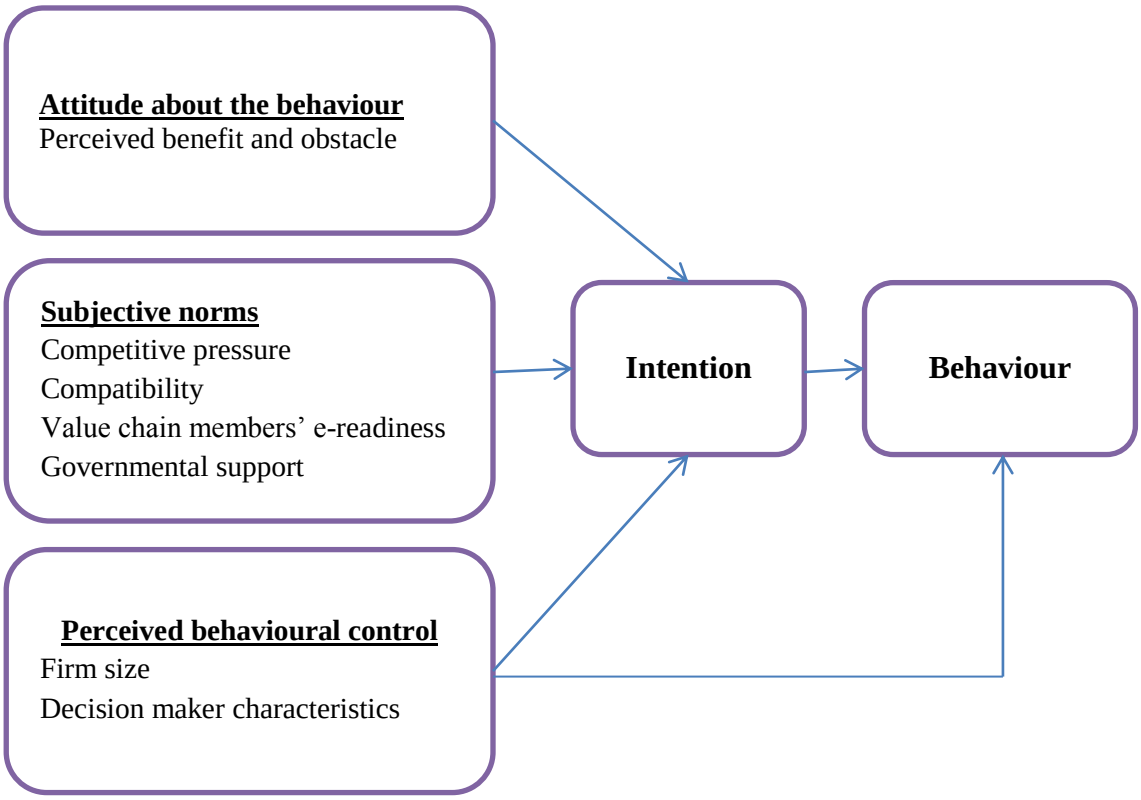
External Context:

Competitive pressure; many studies recognized competitive pressure as an adoption driver, it refers to the degree of pressure from competitors. According to Lina & Linb (2008) the emergence of competitive pressure is plays a key role in integrating and diffusing of e-business. This implies that when firms face strong competition, they tend to implement more aggressively.

Value chain members' readiness; Firm's e-business adoption decision may be influenced by technological readiness of its value chain members. It is necessary for e-business to take place that all trading partners adopt compatible electronic systems (Chau and Tam, 1997; Sato and Hawkins, 2001; Zhu & Kraemer, 2002; Simatupang et al 2002; Ramsey, 2005). Consumer readiness reflects the potential market volume, and thereby determines the extent to which innovations can be translated into profitability.

Governmental Support; Legal regulations, and government policy initiatives in form of liberalisation of trade and telecommunications policies; improvement of telecommunications

infrastructure; adequate legislation to manage risk; and the emergence of both e-banking and e-government all have been recognized as extremely important in facilitating e-business in society (Larpsiri et al 2002; Andersen et al, 2003; Gibbs, 2003; Scupola, 2003; Roberts and Toleman, 2007)



Proposed Framework

Research Propositions:

R1: The adoption of e-business by SMEs is positively related to the size of organisation.

R2: There is a positive relationship between e-business adoption and perceived benefits in SMEs.

R3: There is a positive relationship between e-business adoption and perceived compatibility of using e-business in SMEs.

R4: The adoption of e-business by SMEs is positively related to the manager/owner entrepreneurial characteristics.

R5: The adoption of e-business by SMEs is positively related to degree of competitive pressure

R6: The adoption of e-business by SMEs is positively related to the value chain members' e-readiness.

R7: The adoption of e-business by SMEs is positively related to the governmental support concerning e-business.

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