

Conceptualizing Model of Factors Influencing Electronic Commerce Adoption in Iranian Family SMEs

Seyed Kaveh Jamali¹, Govindan Marthandan¹, Mahdi Khazaei², Behrang Samadi³ & David Yong Gun Fie⁴

¹ Graduate School of Management, Multimedia University (MMU), Malaysia

² Faculty of Economics and Social Sciences, Bu-Ali Sina University, Iran

³ Faculty of Business and Management, Asia Pacific University of Technology and Innovation (A.P.U), Malaysia

⁴ Faculty of Management, Multimedia University (MMU), Malaysia

Correspondence: Seyed Kaveh Jamali, Graduate School of Management, Multimedia University (MMU), Malaysia. E-mail: jamali.kaveh@yahoo.com

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Abstract

Purpose - This paper aims to provide a conceptual model for the purpose of examining potential influencing factors as well as particular effect of family SMEs' heterogeneity factors on EC adoption in Iranian family SMEs.

Design/methodology/approach - The conceptual model originates from EC adoption study backgrounds, grounded in the major concepts of frequently EC adoption and their dependent-extended models. Literature review presents relevant items under their main first order factors, including family SMEs' heterogeneity factors, categorized by contexts.

Findings - The model, in which EC adoption refers to the significance of 'Extent of Deployment' as innovation behavior, respecting to the theoretical basis of human behavior including essential pure theories (i.e. Learning; Anchoring-and-Adjustment) and major concepts of frequently EC adoption models (TAM; TPB; SCT; DOI), besides role of family SMEs' heterogeneity factors (i.e. The moderating effects of 'Family Strategic Orientation') provided a basis for assessing potential EC adoption antecedents (under which different facets of EC adoption would be considered) including 13th first orders, categorized under four main individual, organizational, industrial, and national contexts.

Practical implications - As a sustainable business market mean, EC adoption as an extra-exploitation of electronic commerce, making wider and more diversified external 'business-linked' and/or 'customer-linked' business relationships, particularly for family SMEs that suffer from 'marketing deficiency', time and effort is necessary so as to identify influencing factors and diagnose their effects on EC deployment in such Iranian SMEs, where EC adoption is questionably near to ground. The presented model is quite valuable for the analysis.

Originality/value - This paper presents a conceptual model for analyzing EC adaption factors under related contexts. Independent influences of 12 first potential factors categorized in four contexts as well as the moderation effect of 'family strategic orientation' variable on EC adoption are studied in the model. The design differs from previous studies as they used dichotomous approaches for 'family strategic Orientation' determination.

Keywords: electronic commerce, EC adoption, family SMEs, Iranian family SMEs, family (strategic) orientation, intergenerational succession

1. Introduction

Family SMEs as the majority of family businesses, which in turn are the most spread businesses across the world (Astrachan & Torsten, 2010), play an important role in the global economy, by creating a safe and transparent investment environment, overcoming the milieu of economic crisis. Family SMEs are the crucial section, not merely based on their critical involvement in economy, but presenting a long-term steadiness and responsibility. They represent 70-90% of the global GDP (Wealth and the Barclays Economist Intelligence Unit, 2009), 50% of the GDP and employment in US (Astrachan & Jaskiewicz, 2008), more than 60% of the European companies in a vast range of sectors (European commission reports, 2009), two-thirds of Small and Medium Enterprises (SMEs) as the dominant form of business in Australia (Kotey, 2005), more than 90% of Japanese domestic companies

(Astrachan & Jaskiewicz, 2008), 95% of the private companies in the Middle East (Walton and Whitener, 2010) and dominate form of SMEs comprising 98% of business in Iran (Jamali et al., 2015). Relatively, the regional advancement in the majority of societies are highly depends on the family SMEs' contribution (IFERA, 2003). They have a direct effect on poverty reduction and employment by sharing the economic pie to the societies' disadvantageous like youngsters and absorbing the redundant manpower, resulting from governments' privatization policies. However, despite the numerous advantages, they evidently suffer from serious challenges such as limited resources, deficiency of internationalization and unknown image. Accordingly, they need to develop their internationalization strategy, resourcing and business image (Lohrke et al., 2006).

In the new-industrial growth paradigm, the need for growth and sustained competitiveness are more particularly perceived by family SMEs (Gersick et al., 1997). relatively, the electronic commerce could be a critical investment, not only as a competitive driver, but also as an integral part of the strategic business plan with direct business-concerned benefit points (i.e. in-house efficiency enhancement and operational savings) and indirect business-concerned benefit points (i.e. internationalization and market position improvement) (Iacovou, Benbasat, & Dexter, 1995). It could help them overcoming their existing challenges, and guaranteeing their long term way of life by side to side superior economy of scale and resource accessibility. However, family SMEs express an idiosyncratic feature, in which the organizational need is perceived under lens of three intertwined family, business and CEO concerns (Sharma, Chrisman, & Chua, 1996). Accordingly, their perception of innovation characteristics and advantages not only should fulfill their business-related needs such as changes, growth and internationalization, but also should satisfy the family-related and CEOs'-related needs.

There is a considerable question as whether electronic commerce practices can be adopted in a same approach in businesses. While EC adoption is broadly considered by large companies from corner to corner in the world, adoption of EC in the SMEs is lagging behind (Lee & Xia, 2006). It seems large-sized companies and SMEs, according to their nature and technological needs, act differently in electronic commerce adoption. Although various challenges in concern with EC adoption in SMEs are also concerned in family SMEs in general, but some challenges are exclusive to family SMEs. As aforementioned, the unbalanced priorities in family, CEO and business subsystems in family firms might be a clue to better understanding of the differences. The family and CEO concept and their effects on family SMEs' behavior are the primary entrance way to distinguish family SMEs from Non-family SMEs in terms of EC adoption. Family SMEs, compared with the Non-family SMEs, operate under dissimilar limitations and diverse objectives. They have distinctive needs for tracking the Non-commercial objectives; thus, are managed differently (Leach et al., 1990; Leach, 1994). Moreover, they suffer from a lack of attractiveness to absorb skilled workforce, due to their sense of nepotism (KMU Forschung Austria, 2008). There are considerable challenges between following the profit or Non-commercial goals in family SMEs, depending on their strategic orientation (Sharma et al., 1997), so-called 'Family (Strategic) Orientation'. Unlike Non-family SMEs, the direct benefits of EC in family SMEs may be perceived as less tangible, compared to the EC indirect benefits (KMU Forschung Austria, 2008). Moreover, family SMEs are more conservative, regarding to their long term family control and ownership desiring (Donckels & Frohlich, 1991), which may disarm them from typical SMEs' innovativeness and flexibility. There are also some other differences related to how they interact with the environmental context, such as interactions with social environment and government that may alter their approach to EC adoption. For instance, family SMEs; unlike Non-family SMEs, have an intense networking interest to the social and not to the economic business partners (KMU Forschung Austria, 2008). Moreover, the existing studies indicated that, there is a clear lack in terms of EC adoption in developing countries, which hold them behind of development countries in this respect (Kartiwi, 2006). This is particularly more considerable, as far as the SMEs in such countries are concerned (Sam & Leng, 2006). Such paucity in terms of EC adoption in developing countries implies that the EC adoption factors in SMEs might be variations in the different nations, regarding to the socioeconomic differences such as infrastructural and cultural aspects (Daniel & Grimshaw, 2002; Sarosa & Underwood, 2005; Kartiwi & MacGregor, 2007).

Despite the considerable body of EC adoption literature in LSEs and SMEs' domains, there is still a little known about EC adoption in family SMEs' context, particularly in developing countries. Likewise, the majority of EC adoption study in Iran (as a developing country) has been performed in the LSEs and SMEs and there is almost no exclusive study on family SMEs. On the other hand, regarding to the significant differences among EC adoption studies in developing and developed countries; LSEs and SMEs; and particularly Non-family SMEs and family SMEs (with respect to the unique family SMEs' attributes; such as, altruism, conservatism, independency and social networking), the generalization of the previous results of related studies into Iranian family SMEs is questionable. Accordingly, we were motivated by a concern that the low rate of average EC adoption in Iranian family SMEs could be impacted by the particular factors in such distinct SMEs in Iran regarding to their unique

cultural, legal, infrastructural, economic, and even political situation. Thus, gaining knowledge about the CEO as a dominant decision maker in family SMEs in Iran and their perceptions of the potential related factors was vital in order to extend the EC deployment among Iranian family SMEs. As such, this study examined the past literature and then supplemented this work by examining the relationship between each first order antecedents and EC adoption.

The rest of this paper is structured as follows: most frequently used EC adoption models in a broader domain of SMEs' literature are studied in the Literature review section. Then, in the following section, the potential influencing factors on EC adoption in Iranian family SMEs are identified and respective propositions are made. Next, the development of the conceptual research framework is described. Then, both theoretical and managerial implications as well as avenues for further research are presented. Finally, conclusions are drawn with respect to the new knowledge derived from this research study.

2. Literature Review and Propositions Development

In the literature the majority of existing EC adoption studies have been investigated in the LSEs and/or SMEs, and there is an evident gap in related studies in family SMEs' context, especially in the developing countries. The number of articles, journals and general studies in family SMEs' context, compared to the overall studies, is considerably low (Astrachan & Torsten, 2010), which it seems to be even worse in case of developing countries (Gomez, 2012). Shanker and Astrachan (1996) underlined two main reasons in this respect: a) family SMEs have not been considered as a distinct entity for a long time by government agencies and even academics, b) There is almost no specific definition for family SMEs; thus, conducting research in such businesses is difficult. Relatively, there is almost not a quite understanding of the ways that family SMEs venture new technologies, operate, and source their needs in the market.

Table1. EC adoption studies with additional factors and/or models in SMEs' context

Study	Theoretical Basis	Additional Factors
Iacovou et al. (1995)	DOI	External pressure, organizational readiness
Premkumar and Roberts (1999)	DOI	Top management support, Firm Size External pressure
Chwelos et al. (2001)	DOI	External pressure, Organizational readiness
Kuan and Chau (2001)	DOI	Organizational Factors, Environmental Factors
Mehrtens et al. (2001)	DOI	Organizational readiness - External pressure
Mirchandani and Motwani (2001)	DOI	- Management time, Employees' computer knowledge, Information intensity, competition, cost
Lertwongstien and Wongpimmwatana (2003)	DOI	Organizational Factors, Environmental Factors
Al-Qirim (2007)	DOI	Cost, Size, Information intensity, Vendor support, External pressure, CEO's Innovativeness and Involvement
Jeon et al. (2006)	DOI	Management characteristics, Organizational characteristics, Environmental characteristics, Business strategic orientation
Lee (2004)	DOI, SCT	Competitive Pressure, Financial slacks, Innovativeness
Seyal et al. (2004)	DOI, TAM	Organizational Factors, Environmental Factors
Wymer and Regan (2005)	DOI, TAM, TPB, SCT	-----
Grandon and Pearson (2004)	TAM	Organizational readiness, External pressure, Compatibility, Organizational support
Dholakia and Kshetri (2004)	SCT	Firm Size, Prior technology use, Prior media use, Perceived Competitive Pressure
Kula and Tatoglu (2003)	TPB	Attitude toward Internet use
Celuch et al. (2007)	TPB, SCT	-----

Despite the noticeable efforts clarifying EC adoption phenomenon in Iranian SMEs (i.e., Ghamatrasa, 2006; Ajdari, 2007; Afzal, 2008; Hajkarimi & Azizi, 2008; Sanayei & Rajabion, 2009; Ghorishi, 2009; Sameni & Khoshalhan, 2009; Abbasi, Sarlak, Ghorbani, & Esfehiani, 2010; Ghobakhloo, Aranda, & Amando, 2011a; Ghobakhloo, Aranda, & Amando, 2011b; Hajli & Bugshan, 2012); there is almost no related study in family SMEs' context in Iran. Furthermore, the significant differences in terms of EC adoption, between large-sized and SMEs, Non-family SMEs and family SMEs, and also developing and developed countries had made the usage of existing SMEs' EC adoption models and findings not quite appropriate to explain EC adoption in family SMEs.

In the SMEs' literature, the following models have been widely approached: Diffusion of Innovation Model (DOI) (Rogers, 1983, 1995, 2003); Social cognitive theory (SCT) (Bandura, 1986); Theory of Planned Behavior (TPB) (Ajzen, 1991); Technology Acceptance Model (TAM) and their dependent extensions models: TAM1 (Davis, 1989), TAM2 (Venkatesh & Davis, 2000) and UTAUT (Venkatesh, Morris, Davis, & Davis, 2003). However, as aforementioned, these model do not seem to be multi-faceted models for explanation of EC adoption in family SMEs' and even in general SMEs' context, as they are often considered with some additional factor(s)/model(s) for better clarification of EC phenomenon in such businesses, in the related literature (See Table 1).

The current study aims to present a rather comprehensive EC adoption framework in Iranian family SMEs' context; by contextually extracting the main concepts of the most frequently used EC adoption models in the related literature (DOI, SCT, TAM, TPB), and then fulfilling their limitation by applying the additional related factors studied in the literature and/or suggested by the current study by using of the literature. As aforementioned, the existing related models had some limitation points accounting for explaining 'EC Adoption' in SME, and family SMEs in particular. The core concentration of the existing models accounting for EC adoption had focused on the 'Individual' and 'Technological' contexts.

To better explain the EC adoption phenomenon in the related contexts, a considerable range of additional factors had been applied in the literature to represent the 'Organizational' and 'Environmental' aspects, proving the point that for presenting an EC adoption comprehensive framework in such businesses there is a need to embrace other relevant factors. In this respect, in order to overcome the aforementioned restrictions, Tornatzky and Klein (1982) applied the widely relevant additional factors that influence the deployment of an innovation, by indicating ten regularly used factors in the related literature, from 75 innovation researches. Accordingly, they presented a three-context framework, called Technology- Organization- Environment (TOE), which consequently had often applied for explaining EC adoption in SMEs, and family SMEs (i.e. Wang & Ahmed, 2009) in the literature. Carayannis and Turner (2006), and Jeon et al. (2006) showed the constant relationship between TOE framework and the 'Adoption behavior'. However, since the factors related to the 'Individual' context (i.e. Subjective Norm; Attitude; Perceived Behavioral Control) were not concerned in the TOE framework, it could not be as a multi-faceted framework explaining EC adoption in family SMEs, where an individual owner-manager CEO is a dominant decision maker.

Considering the restriction, Thong (1999) compounded the 'Individual' context to the TOE, presenting the four major contexts; Management (Individual), Technological, Organizational, and Environmental. However, even after such modifications in the model by Thong (1999), it still overlooked the 'Industrial' context or overlapped that with 'Environmental' context (Looi, 2005). More Recently, Alzougool and Kurnia (2008) presented a rather complete framework explaining EC adoption in such businesses involving 'Organizational', 'Industrial', 'National' and 'Environmental' (readiness) contexts. In this model, the 'National' context is credited to perceived availability of agencies' supports and national structure in relation to 'EC Adoption'. The 'Organizational' context was referred to the perceptions of top managers from the resources, regulations, procedures and processes in the organization in relation to 'EC Adoption'. The 'Industrial' context indicated the perceptions of top managers from the standards and business partners' readiness in the industry in relation to the 'EC Adoption'. And, the 'Environmental' context was referred to the conforming perceived internal and external expectation/pressures in EC adoption. The latter model almost covered down the limitation of previous frameworks, by considering the related factors in the missing 'Industrial' context, as meso level, between 'Organizational' (micro level) and 'National' (macro level) contexts; however, it overlooked the 'Individual' context or overlapped that with the 'Organizational' context.

In the current study, the three contexts of Alzougool and Kurnia's (2008) framework, involving 'Organizational', 'Industrial' and 'National' readiness, were realized as a constructive model, covering most of the contextual restrictions of frequently used models in the literature. In addition, the 'Individual' context, with a wider concept of the 'Management' context (Thong, 1999), involving the individual factors which elevate the readiness (Intention) to obtain the given behavior was applied in this study.

The ‘Individual’ (readiness) context in this research encompassed the individual factors as well as the ‘Perceived Usefulness’, because the electronic commerce awards are not integral to the innovation as such but are related to how are perceived by a CEO as the dominant decision maker in such businesses. ‘Perceived Usefulness’ was previously grouped under the ‘Technological’ Context (e.g., Tornatzky & Fleischer, 1990) and/or in ‘Organizational’ context (e.g., Gibbs & Kraemer, 2004; Alzougool & Kurnia, 2008) in the literature. Moreover, based on the study of Wu and Wang (2005), the ‘Environmental pressures’ as the forth context of model in the study of Alzougool and Kurnia (2008), which is referred to the perceived internal and external pressures (expectation) by CEO to comply with the electronic commerce adoption, was represented by ‘Subjective Norm’ as the CEO’s perception of people who are important to him/her think he/she should or should not perform the behavior and grouped under the ‘Individual’ (readiness) context. Additionally, the concept of environmental effects and their related factors in the literature were grouped under ‘National (readiness) context in the current study. As a result, in this research the related factors were categorized under four-context EC adoption framework, involving ‘Individual’, ‘Organizational’, ‘Industrial’ and ‘National’ (readiness) contexts.

The four main contexts undertook the related factors as a result of joining the most used theoretical models in SMEs and the relevant additional factors studied in the prior SMEs and family SMEs literature and/or extracted from the exclusive family SMEs’ literature based on the similarities. The boldface factors in the table were studied in the SMEs in developed countries which have not been investigated in the developing countries. The highlighted factors were studied in the particular family SMEs’ context. The Italic factors were studied in the SMEs in Iran. The underlined factors were used in the four main theoretical SMEs’ EC adoption models; TAM, TPB, SCT, DOI, and/or their dependent-extension efforts UTAUT, TAM2 (See Appendix A).

3. Relationship between Potential Influencing Factors and EC Adoption

Table 2. First order and their related aspect items suggested by the current study

First Order Factor	Aspect items
EC Adoption	EC Volume, EC Diversity, EC Breadth
1) Perceived (EC) Need	Perceived Need for: Being on the Field, Business Image, Family Image, Growth and Internationalization, Managerial Control
2) Perceived Usefulness (Awards) (EC)	Perceived Business Advantages, Perceived Family Advantages, Perceived CEO’s Advantages, Perceived Observability, Perceived Compatibility, Perceived Trialability, Perceived Reliability
3) Perceived disadvantages (Risk)	Perceived Security Issues, Perceived External Business Risks, Perceived Dissipating Company-Specific Knowledge, Perceived Organizational Dependency
4) Subjective Norm	Perceived Government Pressure , Perceived Passion for Business Excellence, Perceived Customers/Buyers Pressure, Perceived Family’s Social Network Interest, Perceived Pressure for Cherish Family Wealth, Perceived Suppliers Pressure (Khoje et al., 2013)
5) Anchor	CEO’s Attitude (toward EC), Perceived Behavioral Control , CEO Interests , CEO’s Innovativeness, CEO’s Risk Taking , CEO’s EC Related Knowledge and Experience
6) Adjustment	Perceived (EC) Business Performance Satisfaction, Perceived (EC) Family Performance Satisfaction, Feedback Effects of Adoption Decision
7) Intergenerational Successions	Managerial Successions, Ownership Successions, Generational Non-Involvement
8) Perceived Organizational Resources	Perceived Financial Resources, Perceived Skilled Human Resources, Perceived Informational Resources, Organizational Awareness, Managerial Time
9) Perceived Organizational Governance	Organizational Policy and Institutional Framework, Communication Channels, Communication Amount, Having Systematic Process for Managing Change Issues, Having Clearly Defined Roles
10) Perceived Organizational Support	Perceived Family Support, CEO Practical (Involvement) Support Perceived Active (Supportive) Directors’ Board, Perceived Employees (Involvement) Support
11) Perceived Industry Structure	Perceived Availability of: Standards, Information Intensity and Product Characteristics, Online Resources, Portal and Databases, Models of Successful Use, Communicative and Trusted Trading Partners, Coordinating Bodies, Perceived Competition Amongst
12) Perceived National Structure	Perceived Availability of: Telecommunication Infrastructure, Logistics and Transport Infrastructure, EC Adopted Banking System, EC-Related Technology Vendors, Regulatory and Legal Environment and Support, Perceived Public Awareness, Perceived Public Purchasing Behavior (Culture), External Expertise and Services Availability and Support, Perceived Government Support and Commitment
13) Family Orientation (Strategic)	Family Ownership, Family (SME) Culture, Family Future, Family Management

Note: Highlight-factors have not been pointed out in the previous related studies

First order factors (12 independent and 1 moderating factor), categorized under four main ‘Individual’, ‘Organizational’, ‘Industrial’, and ‘National’ contexts (See Appendix A) were underlined as potential EC adoption factors in Iranian family SMEs by the current study. A definition of the selected factors and ‘EC adoption’ were relatively detailed (See Appendix B). Then, through a comprehensive literature review, their aspect items were pointed out, as follow (See Table 2).

3.1 Perceived Need

According to Hersey and Blanchard (1993), perceived need as CEO’s perception of inner motives may cause a motivational situation directed to the balancing inner actual states and desired states by taking a behavior toward given goal. Accordingly, the common thread of better understanding of the family SMEs’ behavior might be found at the perception of CEOs from the ‘Need’, concerning with the three main subsystems of family, business and CEOs in such SMEs. CEO’s perception of E-commerce characteristics and advantages, not only should be perceived as their business-related need, but also should be perceived as family-related and/or CEO-related needs. This might be a clue for better understanding of actual scarcity toward EC in such SMEs, while EC adoption through accessing the potential worldwide market without time and space limitations, seems to be a demanding solution. Perceived need, as a main behavioral motive, had not received enough attention in the related literature and also the research findings in SMEs might not be quiet appropriate to be applicable in family SMEs; therefore, the following proposition is presented:

P1. Perceived need has a direct effect on EC adoption in Iranian family SMEs.

3.2 Perceived Usefulness (Awards)

Perceived usefulness is not integral in technology per se; but, it refers to how it is perceived by the CEO. It is defined as the extent to which a CEO believes that the applications of the EC would make her/him able to do the tasks better (Davis, 1989). Prior studies evidenced that EC usefulness plays a significant role in EC adoption (Riemenschneider et al., 2003; Lin & Wu, 2004; Grandon & Pearson, 2004; Roberts & Toleman, 2007). Effect of perceived usefulness on EC adoption was significantly approved in SMEs’ context in Iran (Ghamatrasa, 2006; Ghorishi, 2009; Abbasi et al., 2010; Hajiha et al., 2010). However, in the family SMEs, EC usefulness is perceived through the lens of three intertwined family, CEO and business subsystems. Accordingly, the EC usefulness in such distinct SMEs not only should fulfill their business needs, such as change, growth and internationalization, but also should satisfy family needs; such as family’s image besides CEO needs, respect to his/her managerial control. As perceived usefulness seemed to be a critical factor in EC adoption behavior in SMEs; the following proposition is presented:

P2. Perceived usefulness (awards) has a direct effect on EC adoption in Iranian family SMEs.

3.3 Perceived (EC) Disadvantages

In spite of the importance of lose side in decision makings, as explained by prospect theory (Tversky & Kahneman, 1991), the perceived EC disadvantages (risks), defined as the CEO’s perception of to what extent they have incurred a loss by using any on-line service (extracted from Lim, 2003), as the lose side of EC adoption decision, have not received enough attention in the related literature. Alzougool and Kurnia (2008) highlighted the significant role of perceived (EC) disadvantages (risks) on EC adoption. This factor was moreover addressed as a determinant factor in EC adoption of Iranian SMEs (Hajkarimi & Azizi, 2008). The perceived (EC) disadvantages in the family SMEs, where there is a “large undiversified asset linked to the ownership, “endowment attachment” and “ineffective separation between business and personal asset” (Welsh & Zellweger, 2010) is even more considerable for EC adoption in compare with non-family SMEs. Therefore the following proposition is presented:

P3. Perceived disadvantages (risks) has a direct effect on EC adoption in Iranian family SMEs.

3.4 Subjective Norm

Subjective norm is defined as CEO’s perception that most people who are important to him/her think he/she should or should not perform the behavior in question (Fishbein & Ajzen, 1975). The role of subjective norm had been evidently studied by prior researches in SME domain (e.g., Kula & Tatoglu, 2003; Riemenschneider et al., 2003; Sarosa & Underwood, 2005; Dawkins & Frass, 2005; Ghamatrasa, 2006; Celuch et al., 2007; Nasco et al., 2008; Abbasi et al., 2010; Hajiha, et al., 2010). However, regarding to the significant differences in case of CEO’s perception of internal and/or external expectation (pressure) in family SMEs caused by their unique characteristics, such as networking intensity, dependency, conservativeness and altruism, the role of subjective norm in such district SMEs, as recently considered by a study of Niehm et al. (2010) needs more investigation. Therefore, the following proposition is presented:

P4. Subjective norm has a direct effect on EC adoption in Iranian family SMEs.

3.5 Anchor

Based on the anchoring and adjustment theory, the theme of 'Anchor' represents a broader concept of (initial) self-evaluation of result desirability. It is defined as the individual initial evaluation of results' desirability. The long life-run experiences as a base of individual initial evaluation was supported by decision theory explaining that the 'Expected Results' is intuitively perceived by the law of large numbers of experiences. Self-perception of behavioral, and control beliefs toward a given behavior, forming the individuals' perception of the possibility that efforts will be led to the desired outcomes, corresponded with 'Perceived Desirability' of results, and 'Perceived Feasibility' of attainment toward given innovation behavior in the innovation adoption literature (e.g. Krueger, Reilly and Carsrud, 2000). The concept of 'Anchor' and its influence on the actual behavior was supported by Venkatesh and Bala (2008). In the typical family SMEs, an owner-manager CEO is dominantly responsible for driving the decision in organization. So, their (initial) self-evaluation of EC result desirability was assumed as a potential EC adoption predictor. Therefore, the following proposition is presented:

P5. Anchor has a direct effect on EC adoption in Iranian family SMEs.

3.6 Adjustment

The behavior of a CEO in an organization is not by random. A behavior is an action, aimed to achieve satisfaction. Based on the anchoring and adjustment theory, to represent the concept of adjusted process-run-time evaluation of satisfaction, the theme of 'Adjustment' is applied. Adjustment is defined as the "Performance-based individual adjustment in mental evaluation of satisfaction". In the current study, the 'Adjustment' is determined by 'Perceived Enjoyment', 'Feedback Effects of Adoption Decision' (as an initial adjustment) and 'Performance Satisfaction' (refer to its instrumentality as accomplishment of the main organizational goals and its valence as desirability of a particular outcome based on organizational value system). The concept of 'Adjustment' and its influence on the actual behavior was supported by study of Venkatesh and Bala (2008). As aforementioned, in typical family SMEs, an owner-manager CEO is dominantly responsible for driving the decision in the organization. Thus, their process-run-time evaluation of satisfaction (adjusted) was assumed as a potential EC adoption predictor. Accordingly, the following proposition is presented:

P6. Adjustment has a direct effect on EC adoption in Iranian family SMEs

3.7 Intergenerational Successions

There is a little-known on the implications of succession on the family SMEs' decisions and behaviors (Molly, 2009). Moreover, there is a range of controversy in terms of generational effects on family firms. Based on the organizational learning process during succession experiments it is assumed that family SMEs with more intergenerational successions, defined as changing the family in charge over generations, will more likely have a practice-learned business routine compared with their counterparts (Molly, 2009). This is aligned with study of Fernandez and Nieto (2005) and Diwisch, Voithofer and Weiss (2007) which addressed the significant positive effects of intergenerational successions on family SMEs' growth and internationalization. Moreover, according to Bjuggren and Sund (2001), the next generation family firms have a more survival chance, to hand over to the later generations, implying that in the intergenerational succession-elaborated family firms with the practice-learning sequence, the innovational behaviors' incidence is more predictable. Accordingly, the following proposition is presented:

P7. Intergenerational successions has a direct effect on EC adoption in Iranian family SMEs

3.8 Perceived Organizational Resource

Tan et al. (2007) defined Perceived Organizational Resource as the CEO's perception of human, financial, and technological resources' availability in the organization. Although this factor had been realized as an insignificant EC adoption factor in SMEs in some studies (Mirchandani & Motwani, 2001; Scupola, 2003; Sarosa & Underwood, 2005), it is assumed to be a basic preparation toward EC adoption and establishing the platform for its deployment. This is in line with studies of Grandon and Pearson (2004), Molla and Licker (2005), Sutanonpaiboon and Pearson (2006), and Chong (2006) in which the perceived organizational resource was referred as a significant factor for a successful EC adoption. This is moreover, supported by the study of Hajkarimi and Azizi (2008), Ghorishi (2009), Sanayei and Rajabion (2009), and Hajli and Bugshan (2012) in case of Iranian SMEs. Accordingly, the following proposition is presented:

P8. Perceived organizational resource has a direct effect on EC adoption in Iranian family SMEs.

3.9 Perceived Organizational Governance

Perceived organizational governance, defined as the CEO's perception of the strategic, tactical, and operational models designing the organization's structure to establish objectives, allocate resources, and make decisions (Tan et al., 2007). It is referred to the CEO's perception of organizational structure; concerning gathering information and communicational ways, decision making, resource allocating, and decision implementation process (Seyal et al., 2004). The organizational governance in developing countries had been realized as an important EC deployment factor (Molla & Licker, 2005). However, the empirical evidence from different developing countries showed inconsistent roles of organizational governance in EC adoption. While, the significance of organizational governance role for EC adoption was accepted in China, its importance was disproved in South Africa and Malaysia (Kurnia et al., 2009). Accordingly, the following proposition is presented:

P9. Perceived organizational governance has a direct effect on EC adoption in Iranian family SMEs.

3.10 Perceived Organizational Supports

In the related literature, the organizational support is constantly realized as a significant factor influencing EC adoption behavior both in developed countries (e.g., Grandon & Pearson, 2004; Tsao et al., 2004; Sparling et al., 2007) or developing countries (e.g., Lertwongsatien & Wongpinunwatana, 2003; Wu et al., 2003). This was moreover approved by the study of Ghorishi (2009) in case of Iranian SMEs. For the current study perceived organizational support, defined as CEO's perception of the availability of support within the organization. It is referred to the extent to which a CEO in family SMEs finds him/herself in a go-ahead relationship with members. However, in family SMEs, the organizational support for EC adoption might involve family's and also board of directors' support regarding to their vital 'advise' and 'control' roles in such SMEs. Accordingly, the following proposition is presented:

P10. Perceived organizational support has a direct effect on EC adoption in Iranian family SMEs.

3.11 Perceived Industry Structure

Perceived industry structure is defined as CEO's perception of nature and structure of an industry (Kurnia et al., 2009). It is referred to the CEO/Manager perception of industry structure, standards, inter-organizational nature of electronic commerce usage, interactions between adopting organizations and external institutions, and their mutual trust and dependencies as well as the power relationships and trading partners' readiness for promoting electronic commerce deployment. If in an industry a single standard of electronic data transfer is ruled and all parts of the industry work systematically together through coordinating bodies, lessening their issues and projecting their expectations, the electronic commerce deployment is increasingly extended. In the EC-related SMEs' literature, only few studies have explored the industry structure variable (Alzougool & Kurnia, 2008; Kurnia et al., 2009). However, some EC-related studies on SMEs had independently explored a number of variables that are related to the industrial context level (e.g. Kaynak et al., 2005, Wymer & Regan, 2005). In the case of Iranian SMEs, Abbasi et al. (2010) studied industry IT maturity. There is an evident lack of related studies for the influence of industry structure on EC adoption in family SMEs. Therefore, the following proposition is presented:

P11. Perceived industry structure has a direct effect on EC adoption in Iranian family SMEs.

3.12 Perceived National (EC) Structure

Perceived national (EC) structure defined as CEO's perception of availability of conducive infrastructural, cultural structure and supporting services that promotes adoption of electronic commerce in the country (Alzougool & Kurnia, 2008; Kurnia et al., 2009). It is referred to EC structural readiness view under country-level lenses, concerning whether national structure, cultural and infrastructural, are translated to an operational EC delivery environment for the businesses. Only few studies have considered the national (EC) structure variable (e.g., Alzougool & Kurnia, 2008). However, some EC-related studies had independently explored a number of variables that are related to the national context level, either in developed countries (e.g., Huy & Filiatrault, 2006; Sarosa & Underwood, 2005) or developing countries (e.g. Zhu et al., 2003). In case of Iranian SMEs, Ghobakhloo et al. (2011b), Afzal (2008), Sameni and Khoshalhan (2009), Sanayei and Rajabion (2009) have done some related studies. These studies indicated that the lack of national readiness, in terms of technological, social, cultural, legal, logistical, and financial structures, was the major inhibitor stalling the uptake of EC in developing countries. Accordingly, the following proposition is presented:

P12. Perceived (EC) national structure has a direct effect on EC adoption in Iranian family SME.

3.13 Family (Strategic) Orientation

Family (strategic) orientation defined as the extent to which the organizational mission is subjected to family

oriented goals (extracted from; Uhlaner et al., 2007; Wang & Ahmed, 2009; Molly, 2009). It is referred to the unique strategic orientation in family SMEs, categorizing them into 'Family-oriented' with a radical high family-orientated, overriding business values, and 'Value-oriented' with an optimized family and business values (Vilaseca, 2002). In fact, family SMEs tracks the mixture and diverse non-commercial concerns (such as having an excellent family communication) as well as the business concerns, adjusting their organizational objectives. In the literature, the 'business strategic orientation' with the different approaches had been frequently addressed in related studies such as Kaynak, Tatoglu and Kula (2005), Chong (2006), Huy and Filiatrault (2006) and Jeon et al. (2006). This was also considered in the related EC studies in family SMEs' context (i.e. Uhlaner et al., 2007). However, the 'family (strategic) orientation' as an exclusive orientation in family SMEs' context and its particular moderation effect on EC adoption in family businesses had been almost neglected (Wang & Ahmed, 2009). Therefore, the particular moderation effects of 'family (strategic) orientation' on EC adoption antecedents were proposed as follow:

P13. 'Family (Strategic) Orientation' has a moderation effect on 'EC Adoption' in Iranian family SMEs.

4. Conceptual Research Framework

Based on the above literature review, a research framework was developed as a mean to examine the effects of the underlined factors on EC adoption in Iranian family SMEs. The relationship between the underlined potential factors and EC adoption in such businesses is illustrated in Figure 1.

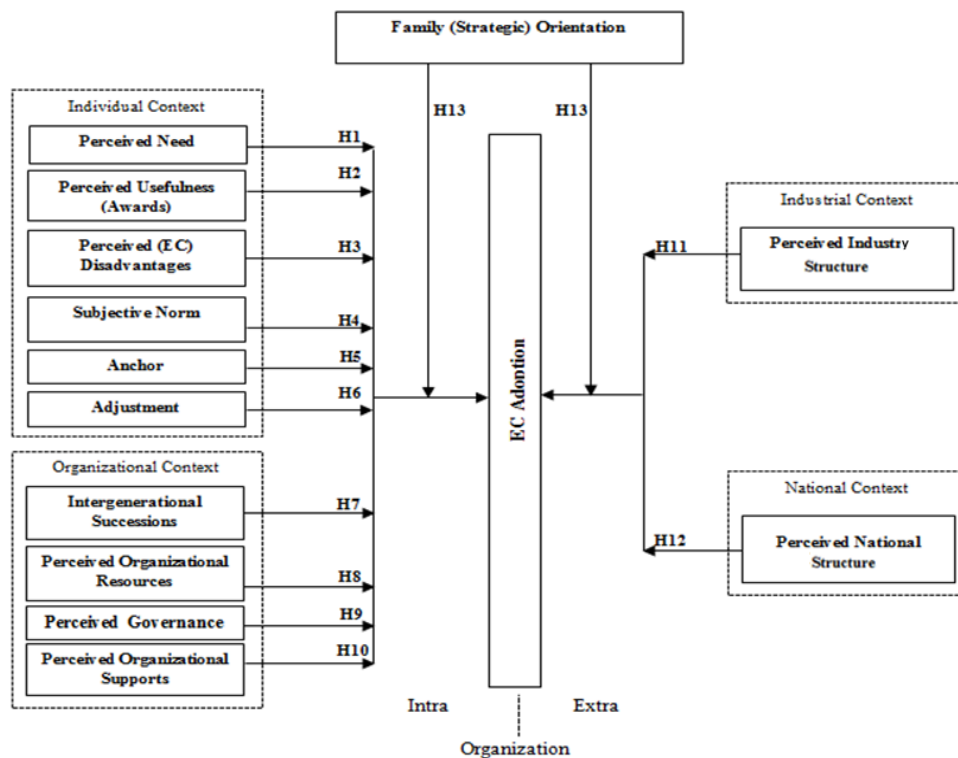


Figure 1. The relationship between the underlined potential factors and EC adoption

The theoretical framework includes twelve independent factors under four 'Individual', 'Organizational', 'Industrial', and 'national' contexts, and one moderator factor by which the relationship between the independent factors and EC adoption as dependent variable is affected. The proposed model supports the view that organizations need to deal with multiple factors influencing EC. The model indicates that extension of EC adoption associates with the greatness of the perceived factors (other than "Perceived Disadvantages" factor with a reverse effect).

5. Theoretical Implication

The study suggest there is an interconnection in EC adoption, Family (Strategic) Orientation, and CEO Perceptions of readiness; individually, organizationally, and nationally. It means both CEOs Individual readiness for electronic commerce and their perceived structure of national and company governance for EC should be

taken into consideration in case of extension of EC deployment in Iranian family SMEs. CEO 'Perceived Usefulness' needs to be enhanced even more for the purpose of making EC deployment easier in Iranian family SMEs. Perhaps, the next item would be 'Organizational Supports' to consider for having a better EC adoption process in family SMEs in Iran.

6. Managerial Implication

In relation to electronic commerce, quite negligible consideration had been given to the importance of observing the conveyance of related activities to the wider and more diversified range of external 'business-linked' and/or 'customer-linked' business relationships, over Internet and Website technological structure', yet such valuations were projected to be critical for the business. Therefore, 'EC adoption' in the current study reflected the significance of 'Extent of Deployment' (outwardly/Inwardly), by looking at 'Volume' as the degree of business, derived from B2B/B2C Internet/Web-based EC (Conducted Online), 'Diversity' as the degree of variety in business functions, conducted by B2B/B2C Internet/Web-based EC (in concern with their trading partners, suppliers and customers), and 'Breadth' as extent to which the EC connections were developed with trading partners, suppliers and customers (Khoje et al., 2013).

EC encouraging strategy and guidelines with the purpose of the press forward EC adoption in family SMEs in Iran should be contingent on collecting data on the present EC-associated observes, complications, and promises in such distinct Iranian SMEs. Reasonably, the proposed model delivered incentive for Iranian family SMEs to adopt operational EC practices in their business. By realization of the particular factors influencing EC adoption in Iranian family SMEs, this research delivered coherent information to re-arrange the resources in Iranian EC developing agencies; such as BAS (Business Advisory Service), BIC (Business Innovation Centre), Training Centre, Business Associations and Incub Centre (Innovation Centre) more competently, in order to boost EC adoption in such Iranian SMEs.

By understanding the point that, some unique distinctiveness in family SMEs might be detrimental to their embarking on e-business practices, it is suitable to invest in identifying and exploring special effects of EC adoption potential predictors in practice in such distinct SMEs in Iran. To this end, the proposed model will demonstrate its value.

7. Conclusion

In conclusion, the current research contributed to the electronic commerce literature by linking EC practices to the underlying 'Volume' as the degree of business, derived from B2B/B2C Internet/Web-based EC (Conducted Online), 'Diversity' as the degree of variety in business functions, conducted by B2B/B2C Internet/Web-based EC (in concern with their trading partners, suppliers and customers), and 'Breadth' as extent to which the EC connections were developed with trading partners, suppliers and customers.

CEO Perceptions of readiness factors; organizationally and nationally indeed have a great impact on EC adoption in the SMEs and particularly Family SMEs in Iran. CEOs perception of Individual readiness might also influence EC adoption in such distinct Iranian businesses; however this possibility had been indicated in little studies. Therefore, this paper mainly targeted to propose a rather comprehensive conceptual model for EC adoption in Iranian family SMEs. It was predictable that the more the degree to which the EC predictors exist, the higher Electronic commerce may adopt (measured by EC Volume, EC Diversity, and EC Breadth) in such distinct SMEs in Iran, except than EC Disadvantages with a reversed effect.

The current paper proposed a model to investigate main first potential factors under four 'Individual', 'Organizational', 'Industrial', and 'national' contexts, and the effect of 'family strategic orientation' as the moderator of EC adoption. They were important factors in conveying wider and more diversified range of external 'business-linked' and/or 'customer-linked' business relationships, over Internet and Website technological structure'. This research was an opening effort to discover the association between CEO perception of individual readiness factors such as "anchor" and "adjustment" in EC adoption in family SMEs' domain. To create the run-through model, supplementary analysis and examination will be accompanied using Structural Equation Modeling for model examining, validation and improvement.

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Appendixes

Appendix A

Table A1. EC and EC-related technologies adoption factors, studied in SMEs' & family SMEs' context or suggested in the common related models

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
A. Individual (Readiness)		Behavioral Intention	Hajiha et al. (2007)
	CEO'S Demographic Characteris Were Not Concerned In This Research	Owner-Manager(CEO) Gender, Age, Educational Level	Chuang et al., (2007)
	A.1 Perceived Need	Perceived Need for Change and Technology Lack of Perceived Need	Wymer and Regan (2005) Chong (2010)
		Perceived Usefulness (Awards)	Igbaria et al., (1997), Lin and Wu (2004), Riemenschneider et al.,(2003), Grandon and Pearson (2004), Ghamatrasa (2006), Roberts and Toleman (2007), Ghorishi (2009), Abbasi et al.,(2010), HAJIHA, et al., (2010)
	A.2 Perceived Usefulness (Awards)	Relative Advantages /Benefits (Indirect/Direct)	Mathieson(1991), Pfeiffer (1992), Iacovou et al., (1995), Vadapalli and Ramamurthy(1997), Agarwal and Prasad (1998), Thong (1999), Premkumar and Roberts (1999), Poon and Swatman (1999), Walczuch et al., (2000), Kendall et al., (2001), Kuan and Chau (2001), Beatty et al., (2001), Mirchandani and Motwani (2001) , Mehrtens et al., (2001), Riemenschneider et al., (2003), Scupola (2003), Grandon and Pearson (2004), Tsao et al., (2004), Teo and

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Compatibility	Ranganathan (2004), Seyal et al., (2004), Kaynak et al., (2005), Chwelos et al., (2005), Looi (2005), Al-Qirim (2005), Huy and Filiatrault (2006), Jeon et al.,(2006), Chong (2006) Ghamatrasa (2006), Afzal (2008), Kurnia and Alzougool, (2008), , Hajkarimi and Azizi (2008), Sanayei and Rajabion (2009), Sameni and Khoshalhan (2009), Ghorishi (2009), Wang and Ahmed (2009), Abbasi et al.,(2010), Ifnedo (2011), Ghobakhloo et al.,(2011b)
		Trialability	Thong (1999), Karahanna et al.,(1999), Beatty et al., (2001), Mirchandani and Motwani (2001), Kendall et al., (2001),Wu and Sawy (2003), Ching and Ellis (2004), Teo and Ranganathan (2004), Grandon and Pearson (2004) , Al-Qirim (2005), Wu and Wu (2005), Jeon et al.,(2006), Huy and Filiatrault (2006), Chong (2006), Sparling et al., (2007), Al-Qirim (2007), Afzal (2008), Sameni and Khoshalhan (2009), Ghobakhloo et al.,(2011b)
		Observability	Kendall et al., (2001), Wu and Sawy (2003), Zhang and Huang (2004), Wu and Wu (2005), Chong (2006), Sameni and Khoshalhan (2009)
		Reliability (of Technology)	Karahanna et al., (1999), Wu and Wu (2005), Chong (2006), Sameni and Khoshalhan (2009)
		Output Quality	Wymer and Regan (2005), Sameni and Khoshalhan (2009)
		Job Relevance	
		Result Demonstrability	
		Image	
	A.3 Perceived Disadvantages (Risk)	Security Issues	Walezuch et al., (2000), Philips (2002), Wymer and Regan (2005), Looi (2005), Ghamatrasa (2006), Sameni and Khoshalhan (2009), Iddris (2012)
		Perceived Risk	Alzougool and Kurnia (2008), Hajkarimi and Azizi (2008)
	A.4 Subjective Norm	Subjective Norm	Harrison D. et al., (1997), Venkatesh and Davis(2000), Riemenschneider and McKinney (2001–2002), Kula and Tatoglu (2003), Riemenschneider et al., (2003), Sarosa and Underwood (2005), Dawkins and Frass (2005), Ghamatrasa (2006), Celuch et al., (2007), Nasco et al., (2008), Abbasi et al.,(2010), Niehm et al., (2010), HAJIHA, et al., (2010)

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Perceived External (Out of Organization) Pressures (Expectation) [Industry, Competitive, Buyers/Consumer, Suppliers, Social]:	Iacovou et al., (1995), Premkumar and Roberts (1999), Kurnia and Johnston (2000), Kuan and Chau (2001), Chang and Cheung (2001), Mehrstens et al., (2001), Mirchandani and Motwani (2001), Ling (2001), Chwelos et al., (2001), Riemenschneider and McKinney(2001) Riemenschneider and McKinney (2002), Zhu et al.,(2003), Kula and Tatoglu (2003), Doolin et al., (2003), Scupola (2003), Lertwongsatien and Wongpinunwatana (2003) , Lee (2004), Dholakia and Kshetri (2004), Grandon and Pearson (2004), Teo and Ranganathan (2004), Seyal et al., (2004), Zhu and Kraemer (2005), Wymer and Regan (2005), Sarosa and Underwood(2005), Looi (2005), Kaynak et al., (2005), Huy and Filiatrault (2006), Jeon et al., (2006), Chong (2006), Al-Qirim (2005,2007), Sparling et al., (2007), Kurnia and Alzougool (2008), Afzal (2008), Nasco et al., (2008), Sanayei and Rajabion (2009), Sameni and Khoshalhan (2009), Ghorishi (2009), Wang and Ahmed (2009), Ifnedo (2011), Ghobakhloo et al.,(2011b)
		Perceived Internal (Intra-Organization) Pressures (Expectation)[Members, Family]	Kurnia and Alzougool (2008), Kurnia et al. (2009)
		Voluntariness	Venkatesh and Bala (2008)
		Attitude	Ajzen (1991), Harrison D. et al., (1997), Kula and Tatoglu (2003),Olson and Boyer (2003), Kula and Tatoglu (2003), Sarosa and Underwood (2005), Nasco et al., (2008), Niehm et al., (2010), HAJIHA, et al., (2010)
		Anxiety	Venkatesh and Bala (2008)
		Affect	
A.5 Anchor		Perceived Behavioral Control	Riemenschneider and McKinney (2001-2002), Nasco et al.,(2008), HAJIHA, et al., (2010)
		Perception of External Control	Venkatesh and Bala (2008)
		Complexity	Thompson et al., (1994), Premkumar and Roberts (1999), Beatty et al., (2001), Wu and Sawy (2003), Riemenschneider et al., (2003), Grandon and Pearson (2004), Huy and Filiatrault (2006), Jeon et al., (2006), Chong (2006), Sanayei and Rajabion (2009), Sameni and Khoshalhan (2009)

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Ease of Use	Igbaria (1997), Riemenschneider et al.,(2003), Seyal et al., (2004), Grandon and Pearson (2004), Lin and Wu (2004), Wymer and Regan (2005), Ghamatrasa (2006), Ghorishi (2009), Abbasi et al.,(2010), HAJIHA, et al., (2010)
		Self-Efficacy	Compeau and Higgins (1995b), Venkatesh and Davis (2000), Lee (2004), Dholakia and Kshetri (2004), Celuch et al., (2007), Venkatesh and Bala (2008)
		Effort Expectancy	
		CEO's Innovativeness/ Innovation Champion	Thong (1999), Thong and Yap (1995), Scupola (2003), Lee (2004), Seyal et al., (2004), Al-Qirim (2005), Wymer and Regan (2005), Huy and Filiatrault(2006), Jeon et al.,(2006), Al-Qirim (2007), Afzal (2008), Sanayei and Rajabion (2009), Ghobakhloo et al.,(2011b),Zohoori et al., (2013)
		Managers' (CEO) Knowledge of the New Technologies and of E-Commerce	Looi (2005), Huy and Filiatrault (2006), Jeon et al.,(2006), Roberts and Toleman (2007)
		Awareness	Idisemi et al., (2011), Hajli and Bugshan (2012)
		Owner(CEO) Characteristics (Personality)	Thong (1999), Croteau and Li (2003), Ching and Ellis (2004), Zhuang and Lederer (2004), Tsao et al., (2004), Sparling et al., (2007)
		Owner-manager's(CEO) Managerial & IT Experience	Dholakia and Kshetri (2004), Sarosa and Underwood (2005),Wymer and Regan (2005), Chuang et al., (2007)
		(CEO) Interest	Iddris (2012)
		Computer Playfulness	Venkatesh and Bala (2008)
		(CEO)Network Intension	Chong (2008)
		Past Behavior	Bagozzi et al., (1992)
		Experience	Venkatesh and Davis (2000)
		Past Use	Kim and Malhotra (2005a,2005b)
		Objective Usability	Venkatesh and Bala (2008)
		Feedback Effects of Adoption Decision	Venkatesh and Bala (2008)
	A.6 Adjustment	Perceived Enjoyment	Chong (2008)
		Outcome Expectations	Venkatesh and Bala (2008)
		Performance Expectancy	
B. Organizational (Readiness)		Perceived Organizational Readiness	Iacovou et al., (1995), Mehrtens et al., (2001), Grandon and Pearson (2004), Molla and Licker (2005), Sutanonpaiboon and Pearson (2006), Chong (2006), Hajkarimi and Azizi

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
Business' Contextual Characteris Are Not Controlled	Organizational Size & Business Category	(2008), Wang and Ahmed (2009), Ghorishi (2009), Sanayei and Rajabion (2009), Hajli and Bugshan (2012) Kuan and Chau, 2001, Zhu et al., (2003), Dholakia and Kshetri (2004), Zhu and Kraemer (2005), Huy and Filiatrault (2006), Jeon et al.,(2006), Chong (2006), Al-Qirim (2007), Sparling et al., (2007), Chuang et al., (2007), Afzal (2008), Sanayei and Rajabion (2009)	
B.1 Intergenerational Successions	Business Age	Hinson and Abor (2005), Chong (2006), Chuang et al., (2007), Sanayei and Rajabion (2009)	
	Business Type	Chuang et al., (2007)	
	Managerial Successions	Sartori (2011)	
	Perceived Organization Resources	Kurnia and Alzougool (2008), Kurnia et al., (2009)	
	Organizational Slack		
	Facilitating Condition (Financial /Technological)	Chang and Cheung (2001), Ghamatrasa (2006)	
	Business Resources	Molla and Licker (2005)	
B.2 Perceived Organization Resources	Financial/Technical/Technological Resources (Cost)	Kuan and Chau (2001), Ling (2001), Mirchandani and Motwani (2001),Chwelos et al., (2001), Mehrtens et al., (2001), Riemenschneider and McKinney (2001-2002), Wu and Sawy (2003), Lertwongsatien and Wongpinunwatana (2003), Zhu et al., (2003), Scupola (2003), Doolin et al., (2003), Grandon and Pearson (2004), Lee (2004), Tsao et al., (2004), Sarosa and Underwood (2005), Huy and Filiatrault (2006), Yeh and Chang (2007), Sameni and Khoshalhan (2009), Iddris (2012)	
	Human Resources	Molla and Licker (2005)	
	Employees' Knowledge of (IS)	Thong (1999), Premkumar and Roberts (1999), Kuan and Chau (2001) Mirchandani and Motwani (2001), Scupola (2003), Zhu et al., (2003), Wu and Sawy (2003), Zhu and Kraemer (2005), Sarosa and Underwood (2005) Huy and Filiatrault (2006), Jeon et al., (2006), Kurnia and Alzougool (2008), Ghobakhloo et al., (2011a), Iddris (2012)	
	IT E-Commerce/ Technical Competence		
	Technological Readiness/E-Business Technology	Srinivasan et al., (2002), Wu and Sawy (2003), Jeon et al., (2006), Sparling et al., (2007), Kurnia and Alzougool	

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Technology Resources	(2008) Molla and Licker (2005)
		Adoption Commitment/Financial Resources/Implementation Cost	Zhu et al., (2003), Scupola (2003), Wymer and Regan (2005), Zhu and Kraemer (2005), Kaynak et al., (2005), Sarosa and Underwood (2005), Jeon et al., (2006), Al-Qirim (2007), Kurnia and Alzougool (2008), Afzal, 2008, Sanayei and Rajabion (2009), Idisemi et al., (2011), Iddris (2012)
		Organizational IT Competence (Organizational) Awareness	Ifnedo (2011) Molla and Licker (2005)
		EC (Organizational) (limitations)	barriers Scupola (2003), Kaynak et al. (2005)
		Lack of Skills and Training	Idisemi et al., (2011)
		SME's Prior Experience	Wymer and Regan (2005)
		Information Sources	Chong (2006)
		Managerial Time	Mirchandani and Motwani(2001)
		Lack of Managerial Time	Chong (2010)
		Perceived Governance	Alzougool and Kurnia (2008), Kurnia et al., (2009)
		(Organizational) Governance	Molla and Licker (2005), Meftah et al., (2015)
		Communication Channels	Chong (2006), Sanayei and Rajabion (2009)
		Communication Amount	Chong (2006), Sanayei and Rajabion (2009), Noguev et al., (2011)n
		Having Clearly Defined Roles	Alzougool and Kurnia (2008)
		Task Variety	Seyal et al., (2004)
		Knowledge Sharing	Idisemi et al., (2011)
		Having Systematic Process for Managing Change Issues	Alzougool and Kurnia (2008)
		Lack of Policy and Institutional Framework	Idisemi et al., (2011)
		Organizational Centralization	
		Organizational Formalization	
		Organizational Interconnectedness	
		Organizational Complexity	
		Organizational system openness	
		Organizational Support (Support within the Organization)	Lertwongsatien and Wongpinunwatana (2003), Wu, Mahajan, and Balasubramanian (2003), Zhuang and Lederer (2004), Grandon and Pearson (2004), Tsao et al., (2004), Sparling et al., (2007), Ghorishi (2009)
		Top Management (CEO) Support	Mirchandani and Motwani (2001), Tsao et al., (2004), Seyal et al., (2004), Sanayei and Rajabion (2009), Ifnedo (2011), Ghobakhloo et al., (2011a)
	B.3 Perceived Governance		
	B.4 Perceived Organizational Support		

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Management Support	Chong (2006)
		CEO's Involvement	Al-Qirim (2007), Afzal (2008), Sanayei and Rajabio (2009), Ghobakhloo et al., (2011a)
		CEO Support and Commitment	Thong et al. (1997)
		Staff Resistance	Fink (1998), Sao et al., (2004), Ihlstrom et al., (2003)
		(Organizational)Responsibilities and Accountability	Alzougool and Kurnia (2008)
		(Organizational) Commitment	Molla and Licker (2005)
		Employees Involvement	Ghobakhloo et al., (2011a)
		Family (Strategic) Orientation	Uhlaner et al., (2007)
		Organization Strategic (Globalization/ International Orientation) /International Experience of the Company	Kaynak et al., (2005), Chong (2006), Huy and Filiatrault (2006), Jeon et al.,(2006), Chong (2006), Uhlaner et al., (2007)
		Organizational Culture	Seyal et al., (2004)
		Technological Opportunism	Srinivasan et al., (2002), Wu et al., (2003), Sparling et al., (2007)
		Managerial Style	Sarosa and Underwood (2005)
	B.5 (Family) Strategic Orientation	Family Business Strategic Orientation	Wang and Ahmed (2009)
		Type of SME's Ownership	Hinson and Abor (2005)
		Entrepreneurial Orientation	Sutanonpaiboon and Pearson (2006), Ghorishi (2009)
		Innovative Character of Enterprise	Oh et al. (2008), Hajkarimi and Azizi (2008), Abbasi et al. (2010)
		Integration with Marketing /Business Strategy	Tsao et al. (2004)
		Priority (of IT Project)	Wymer and Regan (2005)
		IS/IT Investment Evaluation	Tsao et al., (2004)
		Firm Scope	Zhu et al. (2003)
		Export Volumes	Hinson and Abor (2005)
		Perceived Industry Structure	Molla and Licker (2005), Alzougool and Kurnia (2008), Kurnia et al., (2009)
		Information Intensity and Product Characteristics	Alzougool and Kurnia (2008), Kurnia et al., (2009)
		Information Intensity and Product Characteristics	Mirchandani and Motwani (2001), Doolin et al., (2003), Teo and Ranganathan (2004), Al-Qirim (2007), Afzal (2008), Sanayei and Rajabion (2009), Ghobakhloo et al. (2011b)
C. Industrial (Readiness)	C.1 Perceived Industry Structure	Technology Intensiveness of the Industry	Kaynak et al., (2005), Alzougool and Kurnia (2008)
		Industry IT Maturity	Abbasi et al. (2010)
		Availability of Standards	Kurnia and Johnston (2003), Alzougool and Kurnia (2008)
		Availability of Databases and Portals	Alzougool and Kurnia (2008)
		Availability of Online Resources	Alzougool and Kurnia (2008)

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Models of Successful Use	Wymer and Regan (2005)
		Perceived Industry player readiness	Alzougool and Kurnia (2008)
		Perceived Trading Partners Readiness	Alzougool and Kurnia (2008)
		Availability of Trading Partners	Wymer and Regan (2005), Alzougool and Kurnia (2008)
		Lack of Trading Partner Readiness	Zhu et al. (2003)
		Availability of Coordinating Bodies	Alzougool and Kurnia (2008)
		Competition Dynamic	Hajkarimi and Azizi (2008)
		Competition Amongst	Sanayei and Rajabion (2009), Sameni and Khoshalhan (2009)
		Relative SMEs' Strength in the Industry	Kaynak et al., (2005)
		Competition	Mirchandani and Motwani (2001), Afzal (2008), Ghobakhloo et al.,(2011b)
		Industry Competitive Environment	Iacovou et al., (1995), Abbasi et al.,(2010)
		Market Forces E-Readiness	Molla and Licker (2005)
		Collaboration between Trading Partners within the Industry	Alzougool and Kurnia (2008)
		Availability of Communicative Relationships	Alzougool and Kurnia (2008)
		Perceived Level of Trust among Industry Players	Alzougool and Kurnia (2008)
		Strong and Trustful Relationship with Trading Partners	Alzougool and Kurnia (2008)
		Trading Partners' Collaboration	Alzougool and Kurnia (2008)
		Perceived National Structure	Alzougool and Kurnia (2008), Kurnia et al., (2009)
			Alzougool and Kurnia (2008)
		Perceived Government Support	Chong (2006), Alzougool and Kurnia (2008)
		Government E-Readiness	Molla and Licker (2005)
			Seyal et al., (2004), Tsao et al., (2004),Looi (2005), Wymer and Regan (2005), Huy and Filiatrault (2006), Jeon et al. (2006), Alzougool and Kurnia (2008), Sameni and Khoshalhan (2009), Idisemi et al., (2011)
		Government Support and Commitment	Zhu et al., (2003), Zhu and Kraemer (2005), Wymer and Regan (2005), Alzougool and Kurnia (2008), Iddris (2012)
D. National (Readiness)	D.1 Perceived National (IT) Structure	Availability of Regulatory and Legal Environment and Support	Alzougool and Kurnia (2008)
		Availability of ICT Policy and Action Plan	Alzougool and Kurnia (2008)
		Support for the Importance of Technology Readiness	Zhu et al., (2003), Alzougool and Kurnia (2008)
		Public Administration	Scupola (2003)
		Perceived (National) Supporting Services	Alzougool and Kurnia (2008), Kurnia et al., (2009)

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
	Availability of Support from Technology Vendors		Cragg and King (1993), Fink (1998), Doolin et al., (2003), Wymer and Regan (2005), Sarosa and Underwood (2005), Al-Qirim (2007) Alzougool and Kurnia (2008), Sanayei and Rajabion(2009), Ifnedo (2011), Ghobakhloo et al.,(2011b)
	Availability of EC-Related Technologies		Scupola (2003), Wymer and Regan (2005), Sarosa and Underwood (2005), Alzougool and Kurnia (2008), Sameni and Khoshalhan (2009)
	Technology Providers		Sameni and Khoshalhan (2009)
	Availability and Support of Skilled Labor		Alzougool and Kurnia (2008)
	Availability of Financial Support		Ifnedo (2011)
	Availability of Affordable Consultancy Supports (Informational Institutions)		Cohen and Kallirro (2006)
	External Assistance		Ghobakhloo et al.,(2011a)
	Technology Consultants		Sameni and Khoshalhan (2009)
	External Expertise and Services Availability and Support		Thong et al. (1997)
	Consultant Effectiveness and Competence		Thong et al. (1997)
	Availability of National Infrastructure		Sarosa and Underwood (2005), Huy and Filiatrault (2006), Alzougool and Kurnia (2008)
	Environment		Sutanonpaiboon and Pearson (2006)
	Relevant Environmental Participation		Chong (2006)
	Non-Trading Institutional Influence		Chong (2006)
	Availability of Logistics and Transport Infrastructure		Alzougool and Kurnia (2008)
	Availability of Telecommunication Infrastructure		Idisemi et al., (2011)
	Availability of Capable Technology and Telecommunication Infrastructure		Alzougool and Kurnia (2008)
	ICT Infrastructure		Sanayei and Rajabion (2009)
	Culture and Religion (Public/Customer)		Sanayei and Rajabion (2009)
	Consumer Readiness		Sanayei and Rajabion (2009)
	People Resistance & Culture		Afzal (2008), Iddris (2012)
	Ease of Use for Customer		Sutanonpaiboon and Pearson (2006)
	Usefulness for Customers		Sutanonpaiboon and Pearson (2006)
	Public Awareness		Afzal (2008), Sameni and Khoshalhan (2009)
	Public Purchasing Behavior		Afzal (2008), Sameni and Khoshalhan (2009)
	Public Shopping Trend		Sameni and Khoshalhan (2009)

Context	Factors, realized as EC adoption determinants in family SMEs, in the current study	Factors used in the previous related studies or models	Source of studies
		Perceived Availability of Electronic Banking System (EC-Adopted Banking System)	Afzal (2008)
		Reliable Banking System	Sameni and Khoshalhan (2009)

Table A2. Definitions of selected first order factors in the current study

Factor	Definition
EC Adoption	Degree to which the communication, interaction and transaction functions are electronically conveyed in a wider and more diversified range of external 'business-linked' and/or 'customer-linked' business relationships, over ICT technological structure' (extracted from Chong, 2006; Chong, 2008)
Perceived Need	CEO's perception of inner motives direct to balancing inner actual states and desired states (extracted from Hersey & Blanchard, 1993; Boone & Kurtz, 2011)
Perceived Usefulness (Awards)	The extent to which a CEO believes that the application of a special system make her/him able to do the task better (Davis, 1989)
Perceived (EC) Disadvantages	CEO's perception of to what extent they have incurred a loss by using any online service (extracted from Lim, 2003)
Subjective Norm	CEO's perception that most people who are important to him/her think he/she should or should not perform the behavior in question (adopted from Fishbein & Ajzen, 1975)
Anchor	CEO's first personal estimation of results' desirability (extracted from Tvershy & Kahneman, 1974; Hersey & Blanchard, 1993; Venkatesh & Bala, 2008)
Adjustment	Performance-based CEO's adjustment in mental evaluation of satisfaction (extracted from Tvershy & Kahneman, 1974; Hersey & Blanchard, 1993; Venkatesh & Bala, 2008)
Intergenerational Successions	Changing the family in charge over generation. (extracted from Molly, 2009)
Perceived Organizational Resources	CEO's perception of availability of human, financial, and technological resources of a firm (adopted from Tan et al., 2007)
Perceived Organizational Governance	CEO's perception of the strategies, tactical, and operational models designing the organization's structure to establish objectives, allocate resources, and make decisions (adopted from Tan et al., 2007)
Perceived Organizational Support	CEO's perception of availability of support within the organization (extracted from Grandon & Pearson, 2004)
Perceived Industry Structure	CEO's perception of nature structure of an industry (adopted from Kurnia & Johnston, 2003; Kurnia & Alzougool, 2008; Kurnia et al., 2009)
Family (Strategic) Orientation	The extent to which the organizational mission is subjected to family oriented goals (extracted from Uhlaner et al., 2007; Wang & Ahmad, 2009; Molly, 2009)

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