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The moderating role of trust in business to business electronic commerce (B2B EC) adoption

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ABSTRACT

This paper revisited the role of trust in Business to Business Electronic Commerce (B2B EC) settings in Jordan, using an alternative view on trust suggesting that this variable has a moderating effect rather than having a direct impact on the intentions of firms to adopt B2B EC. An interactionist model among trust and technological, organizational, and environmental factors was developed. A survey of 239 supply chain managers in Jordan was used to test the proposed model. Analyzed data shows that the moderating impact of trust was significant in one path, which was perceived desirability (stemming from the diffusion of innovation theory and representing the technological view). Trust did not moderate the impacts of organizational and environmental variables. The findings provided insights into how existing relationships between trading partners may not be flexible enough to absorb new technology. In a context in which trust beliefs are well established and critical such as Jordan, the flexibility of firms in responding to adoption motivations may be hampered rather than enabled.

1. Introduction

As many national economies have become increasingly interdependent through global trade, Business to Business Electronic Commerce (B2B EC) has become an important issue for both developed and developing countries. B2B EC manifests itself as Internet-based technologies that mediate and facilitate transactions between buyers and sellers (trading partners) locally and around the world (Alsaad, Mohamad, & Ismail, 2015; Sila, 2015). While B2B EC technologies promise to link trading partners in an effective manner, many firms have been reluctant to adopt and use these technologies, mainly because of the various risks associated with conducting transactions through them. Existing literature suggests that a lack of trust between trading partners has frequently prevented trading partners from transacting using B2B EC technologies (Hart & Saunders, 1997; Son, Tu, & Benbasat, 2006; Teo, Lin, & Lai, 2009). Much of the research investigating the role of trust is based on the premise that trust beliefs about a trading partner mitigate the uncertainties related to vulnerabilities such as information sharing, opportunistic behaviors, imbalance of power, and conflicts. Thus, a higher level of trust about a specific trading partner is posited to increase the likelihood of potential adopters to take risks inherent in adopting B2B EC, and thus greater trust facilitates the adoption of B2B EC (Chong & Bai, 2014; Hart & Saunders, 1997; Pan, 2013; Son et al., 2006). Although this trust proposition is widespread in the adoption literature, the cumulative empirical evidence suggests that the motivational role of trust on the adoption of B2B EC is less pronounced, see for example (Al-Hakim, Abdullah, & Ng, 2012; Chong & Bai, 2014; Hart & Saunders, 1998; Huang, Janz, & Frolick, 2008; Saunders & Clark, 1992; Sila, 2010, 2013).

Alternatively, rather than being a motivating variable, trust might be understood as a condition or situation in which joint-action behaviors (i.e., B2B EC adoption), perceptions, and attitudes are likely to occur (Dirks & Ferrin, 2001; Shaw & Staples, 2004). Specifically, trust, as a psychological factor, represents the accumulated knowledge about, and experiences with, another party (Dirks & Ferrin, 2001). To further explicate this thought, Dirks and Ferrin (2001) suggest that trust can either foster or inhibit joint-action behaviors by means of two distinct processes. First, trust affects the assessment of the future joint behavior with another party. Second, trust affects how someone interprets the motives of the underlying behavior. Accordingly, trust, as a

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situational opportunity and/or constraint, affects the occurrence and the meaning of adoption behavior as well as the functional relationships between variables (Hong, Chan, Thong, Chasalow, & Dhillon, 2014; Johns, 2006). Thus, Hong et al. (2014) suggest that incorporating situational variables into theoretical frameworks as moderators is an appropriate choice when their role as behavioral motivations are not well established. While the motivational role of trust on the adoption of B2B EC has been less pronounced in several empirical studies, a few empirical investigations have treated trust as a condition or situation that moderates the motives of adoption behavior.

In order to fill this void in the existing literature, this current empirical endeavor is aimed at extending the current literature by investigating the moderating role of trust on well-established motivating factors. Among the various perspectives identified in the literature, Innovation Diffusion Theory and the Technology-Organization-Environment (TOE) framework present the most comprehensive and influential viewpoints. Both have emphasized how variables related to TOE promote innovation adoption (Sila, 2013; Zhu, Kraemer, & Xu, 2006). This current study features an interactionist model accounting for the differential influences of several TOE motivating factors and how these interact with trust.

This study contributes to the current literature in several ways. First, it is among the early empirical endeavors examining the interaction effects on TOE-motivating factors with trust as a moderator. An articulated and validated model of the psychological mechanism that links TOE-motivated factors and propensities of firms is critical for a conceptual understanding of B2B EC adoption. The TOE framework is context-sensitive and will reveal unknown relationships, which should provide for actionable reference points for both practitioners and academicians. Second, this study adds to the ongoing debate regarding how trust could affect behaviors in organizations (Dirks & Ferrin, 2001; Langfred, 2004; Shaw & Staples, 2004). Due to cultural and socio-demographic differences, this study proposes that trust could also have a negative effect in some contexts like Jordan. Testing the proposed framework in an environment (Jordan) in which social characteristics may differ from those of Western societies in which previous studies have been conducted (Al-qirim, 2010, pp. 540–546), the present study provides new insights about B2B EC adoption from a non-Western point of view. In such a context, social aspects of traditional ways of doing business are not easily exchangeable with IT-enabled innovations that offer higher efficiency (Driedonks, Gregor, & Wassenaar, 2005; Kshetri, 2010). Finally, in terms of methodological contributions, the present paper advocates the use of more advanced statistical approaches to explore the moderating effects in studies relating to adoption. For example, an interaction latent variable method is capable of parceling out measurement error and thus produces a more accurate picture of interactions than do other, more traditional, approaches do (Hair, Hult, Ringle, & Sarstedt, 2014).

2. Background

This paper adopts a broad definition of B2B EC that includes Internet-enabled B2B technologies, which allow supply chain partners to share information, and buy and sell products (Sila, 2013). Such technologies are employed in inter-organizational contexts to mediate buyer-supplier transactions (Subramani, 2004). B2B EC enhances the information-processing capabilities of a particular relationship, thus enabling and supporting greater inter-firm cooperation as well as reducing uncertainty. The relationship between B2B EC technologies and several facets of firm performance have been positively established and noted across a myriad of studies (Dong, Xu, & Zhu, 2009; Yao & Zhu, 2012). In view of the fact and presumptions that adoption of B2B EC entails substantial improvement in overall firm performance, several researchers have investigated factors that determine a firm's decision either to adopt or exhibit the propensity to conduct online B2B transactions. With respect to the theories explaining B2B EC adoption, the TOE model and Innovation Diffusion Theory (IDT) have been the most popular (Sila, 2013; Zhu et al., 2006). These theories emphasize both the role of technological, organizational, and environmental factors and how they affect B2B EC adoption (Hsu, Kraemer, & Dunkle, 2006). These theories are therefore employed as preferred lenses through which to view the conceptual research framework in this current study.

IDT proposes that innovation attributes including Relative Advantage, Cost, Compatibility, Complexity, Trialability, and Observability (among others) help determine the behavior of potential adopters toward an innovation (Rogers, 2003). Because Relative Advantage, Compatibility and Complexity have been consistently reported to be the most important factors (Hameed & Counsell, 2014; Tornatzky & Klenin, 1982), they are considered in this study. Relative Advantage is a perception that reflects expected efficiencies or benefits that an innovation may provide to a potential adopter as compared to a previous practice or idea (Rogers, 2003). Potential adopters are likely to adopt an innovation that provides benefits greater than the previous idea. Compatibility reflects the degree to which an innovation is perceived as being homogeneous within an operational business environment (Rogers, 2003). Adopting B2B EC often requires considerable modifications to a firm's work practices, structure, processes, and/or routines. In view of the need for these modifications, a greater degree of compatibility permits the adoption of B2B EC with minimum adjustments to the current operating environment (Rajaguru & Matanda, 2013; Thong, 1999). Finally, complexity denotes the extent to which an innovation is relatively difficult to understand, implement, and use, and complexity is often considered an inhibitor in the adoption of a behavior (Rogers, 2003). That is because complexity raises uncertainty and increases the perceived risk of successful adoption of an innovation (Premkumar & Roberts, 1999; Ramdani, Kawalek, & Lorenzo, 2009). Consequently, the easier the technology is to be understood, the faster the adoption process can take place and vice versa.

Although prior studies have dealt with these three attributes in isolation, recent studies have found that they are highly correlated and reinforce each other (Alsaad et al., 2015). Specifically, Alsaad et al. (2015) suggest that all of these attributes joined together comprise the perception of innovation desirability. This perception reflects the extent to which an innovation is an appropriate and desirable choice. Therefore, potential adopters who possess the general notion that B2B EC is a desirable choice will have a greater tendency to adopt B2B EC than those who do not. In line with Alsaad et al. (2015), this current study proposes that perceived B2B EC desirability, as a global conception derived from innovation attributes, has a direct influence on a firm's intention to adopt B2B EC. Thus, the following hypothesis is posited:

H1. Perceived desirability positively influences a firm's intention to adopt B2B EC.

Organizational context is another important dynamic in determining the propensity of a firm to adopt B2B EC. Typically, the organizational context reflects descriptive features concerning an organization (Picoto, Bélanger, & Palma-dos-Reis, 2014). As B2B EC requires a significant amount of technological knowledge and intensive resources, organizations should be ready to adopt such technologies successfully (Chwelos, Benbasat, & Dexter, 2001; Iacovou, Benbasat, & Dexter, 1995). An organization's readiness refers to the extent to which the available resources are perceived

to be equivalent to the resources required for successfully adopting and maintaining a specific innovation (Fathian, Akhavan, & Hoorali, 2008). Chwelos et al. (2001) and Iacovou et al. (1995) further suggest that organizational readiness represents technological sophistication and financial resources. Having sufficient financial resources can be used to legitimize and support actions related to acquiring, installing, and integrating of B2B EC in business processes. These resources are also needed to cover ongoing expenses during the adoption and usage stages (Rai, Brown, & Tang, 2009).

While financial resources are related to adoption allocations and expenses, IT sophistication is concerned with the current level of IT usage in an organization (Chwelos et al., 2001; Rai et al., 2009). By having a higher level of IT sophistication, firms will be equipped with superior information management practices, resources for the organizational integration of IT innovations, and employees with high levels of Information System knowledge (Chwelos et al., 2001; Mishra & Agarwal, 2010; Rai et al., 2009). Succinctly put, IT sophistication represents a platform and capacity by which decisions and actions related to B2B EC can be supported and implemented (Mishra & Agarwal, 2010; Rai et al., 2009). Hence, both financial resources and IT sophistication as sub-constructs of organizational readiness are key drivers of a firm's tendency to adopt B2B EC. Hence, the following hypothesis is posited:

H2. An organization's readiness positively influences a firm's intention to adopt B2B EC.

While an organization's readiness reflects technological and financial resources, top management support is an organizational feature representing the political resources associated with B2B EC adoption. Top Management support refers to the extent to which a firm's leadership acknowledges the importance of B2B EC as well as the extent to which they are devoted to its adoption (Jitpaiboon, Vonderembse, & Asree, 2010; Liang & Saraf, 2007; Zheng, Chen, Huang, & Zhang, 2013). Having management support ensures sufficient allocation of technological and financial resources that are required to adopt IT innovations (Damanpour & Schneider, 2006; Liang & Saraf, 2007; Quinn, 1985; Zheng et al., 2013). Top management is an influential force that may work either on behalf of or against the adoption process. When a firm's management both appreciates B2B EC and works positively for its adoption, they will inculcate corporate cultural values that support it, thereby reducing organizational resistance (Damanpour & Schneider, 2008; Elenkov, Judge, & Wright, 2005; Hameed & Counsell, 2012; Quinn, 1985). Conversely, if management support is at a low level or non-existent, the adoption process will be accorded a lower priority. Therefore, top management support is a fundamental factor relating to adoption of B2B EC. This leads to the following hypothesis:

H3. Top management support positively influences a firm's intention to adopt B2B EC.

The last element in the TOE framework is an environmental context that is a base from which a firm operates. Several variables in business environment influence a firm's behavior such as partner pressure, competition pressure, and industry pressure, among others. This study will, however, focus only on the role of competitive pressure as it is the most influential factor in the business environment. Competitive pressure reflects the extent to which an organization is affected by competition in the market to adopt an innovation (Huo, Zhao, & Zhou, 2014; Zhu & Kraemer, 2005). Competitive pressure has been consistently cited as one of the most crucial factors that drives the need for the adoption of innovation (Jeyaraj, Rottman, & Lacity, 2006). Competitive pressure forces firms to offer faster responses to customer demands, shorter lead times, and a greater degree of customization (Huo et al., 2014; Lin, 2014; Zhu & Kraemer, 2005). In view of this, firms should adopt, integrate, and reconfigure their internal and external processes to match the requirements of a rapidly changing environment. Adopting B2B EC technologies allows firms to establish tighter connections and integrate its processes with its downstream and upstream partners (Sila, 2010, 2013; Teo, Wei, & Benbasat, 2003). Thus, when facing a high level of competition, firms are more likely to adopt B2B EC in order to achieve a competitive advantage over their rivals. Hence, this hypothesis is proposed:

H4. Competitive pressure positively influences a firm's intention to adopt B2B EC.

The relational element of trust is well understood to be a fundamental issue in network ties and inter-organizational settings (Al-Hakim et al., 2012; Hart & Saunders, 1998; Obal, 2013; Rousseau, Sitkin, Burt, & Camerer, 1998; Zaheer, Mcevily, Perrone, & Barney, 1998). Trust is not a behavior or a choice, but an underlying psychological condition and an integral and probably irreplaceable part of any particular relationship between two parties (Rousseau et al., 1998). Trust is a psychological state in which a particular party has an intention to accept vulnerability depending upon the positive expectations of the behavior or intentions of another (Mayer, Davis, & Schoorman, 1995; McKnight, Cummings, & Chervany, 1998). Trust can be examined at multiple levels including the interpersonal level, inter-organizational level, and system level.

Corresponding to the fact that B2B EC is designed to mediate an existing relationship between businesses trading partners, the focus of this current study is on the inter-organizational level perspective. Trust within an inter-organizational exchange relationship is described as “a firm's belief that another company will perform actions that will result in positive outcomes for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm” (Anderson & Narus, 1990, p. 45). In a B2B context, trust provides one business party with an optimistic anticipation of the behavior of another business party and has the effect of safeguarding transaction-specific investments made by one party. Thus, trust is an important element in collective decision making and the relational exchange between trading partners (Son et al., 2006). Trust has been conceptualized as either unidimensional (Mayer et al., 1995; Zaheer et al., 1998) or multidimensional (McKnight et al., 1998; Rai et al., 2009), but has typically been strongly associated with benevolence, honesty, and competence between trading partners (Mayer et al., 1995; McKnight et al., 1998; Son et al., 2006).

Trust is the heart of social exchanges, and its influence in determining organizational outcomes across of a myriad of empirical works has been fairly consistent and positive. Nonetheless, its effect on organizational behavior has been weak and less consistent (Dirks & Ferrin, 2001; Langfred, 2004; Shaw & Staples, 2004). Several scholars have suggested that, because trust is a contextual and conditional variable, it is more properly exerted as a moderating factor rather than as one having a direct effect on organizational behaviors (Dirks & Ferrin, 2001; Langfred, 2004; Shaw & Staples, 2004). That is, organizational behavior is triggered primarily by means of several motivational variables, and the context in which the organization behavior occurs should play a moderating role rather than a motivational role (Dirks & Ferrin, 2001; Langfred, 2004). This study attempts to demonstrate the moderating role of trust by first describing predominant and traditional beliefs regarding the positive role of trust on adoption behavior. This study also describes the counterintuitive state of traditional beliefs about trust, in which higher levels of trust between trading partners might be actually be associated with a lower propensity for innovation adoption. That is not to say that

trust does not contribute to the adoption of B2B EC, but rather to explore the rigidities and inertias associated with trust that, in turn, could disturb motivation towards B2B EC adoption.

In view of the prevailing thoughts about trust, researchers have stressed that inter-organizational interaction relies heavily on a high level of trust between trading partners (Kumar, Dissel, & Han, 1996; Sridharan & Simatupang, 2013). This would suggest that building a good buyer-supplier relationship is more important than building sophisticated technologies alone (Beth, Burt, Copacino, & Gopal, 2003; Chae, Yen, & Sheu, 2005). Researchers have also confirmed that B2B EC may not succeed without the presence of trust between trading partners (Ali & Kurnia, 2010; Chang & Wong, 2010; Pavlou, 2002; Soliman & Janz, 2004; Son et al., 2006). In agreement with this line of thought, Ke and Wei (2007) have stated that information sharing between trading partners who are both using IS tools depends on their willingness to share information and knowledge. They further submitted that a lack of trust between the partners reduces the likelihood that the focal firm will share its information with trading partners. This lack of trust causes the focal firm to focus on the risks resulting from an exchange of information with a partner who might not be trustworthy. Ke and Wei (2007, p. 304) quoted a key respondent in their study who said, "… If we think that the partner is not trustworthy, we will not choose to disclose our proprietary information to this company …. It is simply not wise to endanger our business for the 'so-called' potential benefits of knowledge sharing". Furthermore, Venkatesh and Bala (2012) argued that implementation of B2B EC is a resource-intensive process that involves a considerable investment in terms of resources and changes to an organization's processes and routines. Hence, a potential adopter will have an incentive to invest in B2B EC only if a substantial degree of trust exists with a trading partner.

The studies cited above indicate that trust influences adoption behavior by enabling the effects of other variables on this adoption behavior. Dirks and Ferrin (2001) and Shaw and Staples (2004) have argued that, when trust has a moderating effect on behavior, it guides the potential adopter to selectively perceive and interpret factors that have a direct bearing on behavior. Trust between trading partners breeds a sense of psychological reassurance that the relationship will produce the expected results (Andaleeb, 1995; Li, Pieńkowski, van Moorsel, & Smith, 2012). Furthermore, the existence of trust between trading partners allows a potential adopter to invest all necessary resources into the adoption process. This is so because the potential partner does not have to cater for a possible let-down in an exploitative situation (Chong, Chan, Goh, & Tiwari, 2013; Chong, Ooi, Lin, & Tang, 2009; Hart & Saunders, 1997; Kwon & Suh, 2005; Son, Narasimhan, & Frederick, 2005). The above mechanisms imply an additional reluctance among trading partners to adopt B2B EC in the absence of trust even when they are motivated to do so. Under the circumstances of low trust, trading partners are likely to have little cohesiveness and psychological reassurance to deal effectively with internal or external pressure and/or motivation (i.e., TOE related factors) toward B2B EC adoption. This study will therefore posit that trust directs motivation towards reaching adoption decisions by providing information about the advisability of engaging in a particular joint-action behavior like B2B EC adoption.

In contrast to an optimistic bias in studying the role of trust between trading partners (Bachmann & Zaheer, 2006; Molina-Morales, Martínez-Fernández, & Torlò, 2011; Thorgren & Wincent, 2011), this current study suggests that trust could also have a dark side with respect to innovation adoption. In several disciplines, the dark sides of trust has been addressed recently both theoretically and empirically in multiple works (Bachmann & Zaheer, 2006; Langfred, 2004; Molina-Morales et al., 2011; Thorgren & Wincent, 2011; Welter & Smallbone, 2006). Yet, this logic has not been extended to innovation adoption literature. Hence, this study elaborates upon insights drawn from inertia theory (Barnett & Carroll, 1995; Hannan & Freeman, 1984; Hannan, Pólos, & Carroll, 2003; Kelly & Amburgey, 1991) and particularly upon inertia inherited in inter-organizational relationships that Kim, Hongseok, and Swaminathan (2006) initiated and that Thorgren and Wincent (2011) extended to describe the dark sides of trust on the adoption of B2B EC.

The concept of inertia has received extensive attention in organizational theory, playing a vital role in evolutionary change and organizational ecology (Barnett & Carroll, 1995; Hannan & Freeman, 1984; Hannan et al., 2003; Kelly & Amburgey, 1991). Organization theorists suggest that organizations deal with evolving environmental problems by building reliable structures and developing various strategies, routines, and processes that are tightly aligned with a specific situation and environment. They suggest that organizations will experience success by achieving fit or consistency between internal and external environments on the one hand, and organizational structure, processes, and routines on the other (Gresov, Haveman, & Oliva, 1993; Hannan & Freeman, 1984; Hannan et al., 2003; Kelly & Amburgey, 1991; Wu, Huang, & Zhong, 2013). Nevertheless, as organizations pass long periods without essential change, they become more interdependence on their rigid systems, which, in turn, build resistance (inertia) to fundamental change (Briscoe & Tsai, 2011; Hannan & Freeman, 1984; Hannan et al., 2003). Gilbert (2005) identifies two types of organizational inertia that threaten an organizational change, namely, 1) resource inertia and 2) routine inertia. Resource inertia refers to an organization's failure to change patterns of resource investment. Meanwhile, routine inertia refers to an organization's failure to change organizational processes and routines (Gilbert, 2005). In recent years, Kim et al. (2006) and Zollo, Reuer, and Singh (2002) have developed the notion of inter-organizational routines, which are established patterns of collaboration among two parties developed and refined during repeated collaborations. Managers may sense that changing to a new technology will cause a key disruption in currently successful routines that are deeply embedded in their value system, which is considered a source of success (Kim et al., 2006; Venkatesh & Bala, 2012; Zollo et al., 2002).

Thorgren and Wincent (2011) suggested that trust, as an inter-organizational phenomenon, may play an important role in evolving rigidities in inter-organizational relationships. This submission was grounded on at least three possible explanations. First, trust could be understood as an internal cognition of how tasks should be executed in an inter-organizational relationship. Trust embodies and represents knowledge about and, accumulated experiences with, the other party (Dirks & Ferrin, 2001; Thorgren & Wincent, 2011). Such cognition needs a long period of time to be established and depends on both a successful history and a promising future between partners (Bower, Garber, & Watson, 1997; Rousseau et al., 1998; Thorgren & Wincent, 2011). This cognition ultimately leads to positive expectations and a willingness to accept vulnerability. From view point of inertia theory, such advanced trustworthiness beliefs between trading partners signal successful and well-established resources and routines between trading partners (Briscoe & Tsai, 2011; Patzelt & Shepherd, 2008; Thorgren & Wincent, 2011).

Second, trust develops rigidities in inter-organizational relationships through increasing the relational closeness between trading partners (Kelly & Amburgey, 1991; Thorgren & Wincent, 2011; Molina-Morales et al., 2011). In a relationship in which trust is well established between trading partners, the partners eventually gain the requisite experience and develop expertise and

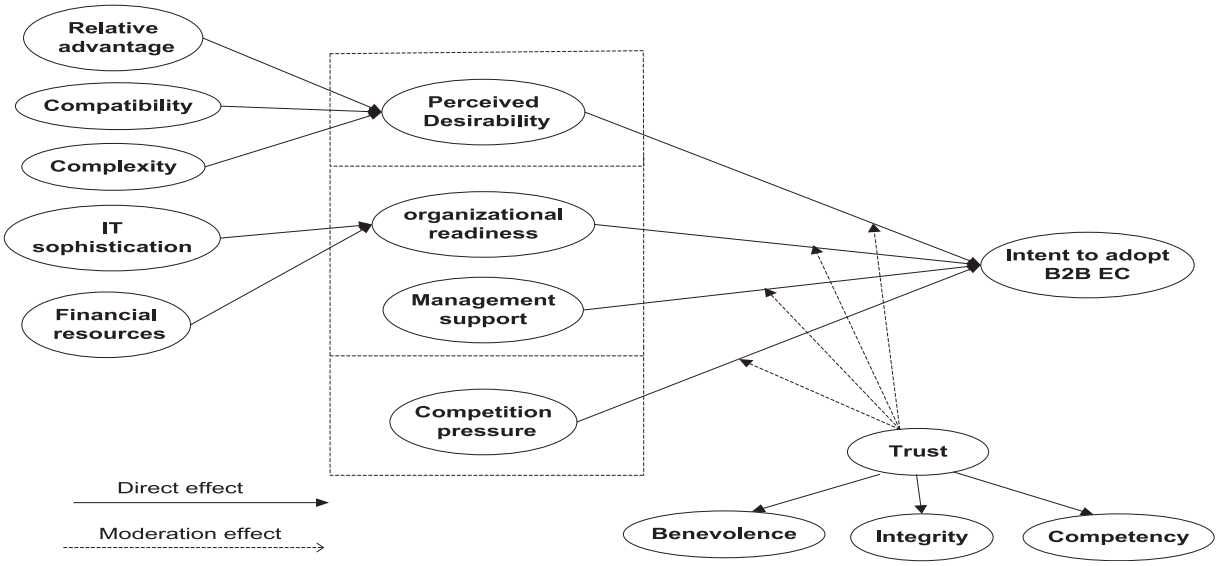

Fig. 1. The framework of the study.

competence in how to gain benefits from a deeply ingrained inter-organizational resource and routine and are probably biased to repeat these patterns and structures (Kelly & Amburgey, 1991; Molina-Morales et al., 2011; Thorgren & Wincent, 2011).

Third, on a relational note, another argument put forward on how trust evolves rigidities is the following. Trust is established on the basis of interpersonal relationships that also reflect the importance of social dimensions in business relationships (Driedonks et al., 2005; Kshetri, 2010; Vlachopoulou & Manthou, 2003). Relationships in which personal and social aspects take preference over business transactions are less likely to be replaced by information technology relationships (Driedonks et al., 2005; Kshetri, 2010; Vlachopoulou & Manthou, 2003). Besides, when a firm's competitive advantage stems from its social and personal relationships with its trading partners, the firm may derive very few benefits from automatic networks (Kshetri, 2010). In view of this, therefore, it the adoption of new technology such as B2B EC that will stimulate a new work practice that entails a transformation and modification of existing practices related to social relations. Such changes could superimpose existing social- and business-related obligations which, in turn, threaten the adoption of B2B EC (Bolton & Smith, 2003; Kshetri, 2010).

Insofar as trust is associated with inter-organizational rigidities in terms of resource and routine, difficulties may exist in responding in a timely manner to environmental, technological, and organizational motivations, thereby calling for pressures geared towards exploiting new opportunities and adoption innovations (Thorgren & Wincent, 2011), i.e., B2B EC. Therefore, in a context in which a high level of trust is present, arguing that several constraints and inertias exist that reduce a firm's ability to deal with internal and external motivation and/or pressure toward B2B EC adoption is plausible. However, "Every truth has two sides. It is well to look at both sides before we commit ourselves to either" (Aesop Quotes).

Thus, two key research questions emerge from the above theoretical discussion. These are:

Research Question 1 (RQ1): Does trust moderate the proposed TOE motivation factors?
Research Question 2 (RQ2): If this effect holds true, in which direction could trust affect the proposed TOE motivation factors?

Fig. 1 below represents the framework of this study.

3. Methodology

Supply chain managers in firms with massive transactions and great experience in supply chain and channel management in Jordan were chosen to participate in this study. Based on the insights from B2B and information technology adoption literature, supply chain managers were considered to be the most appropriate respondents (Saeed, Malhotra, & Grover, 2011; Wu & Chuang, 2009). This is because they are most positioned to respond effectively to the questions that involve multiple relationships and IT-related issues. The samples list for the study was obtained from the database of the Companies Control Department in Jordan. This directory categorizes firms by the size of the capital employed. This directory contains about 176,030 firms. To generate a reasonable sampling frame while ensuring massive supply chain activities in the prospective firms, the sample was restricted to firms that employed a minimum capital of JD[1] 5,000,000. At the same time, this study narrowed the scope to the firms located in Amman, a capital city of Jordan, as about 93% of Jordanian firms are headquarted in this location. Considering all these parameters, the final sample comprised 450 firms. Because B2B EC can be adopted with customers and/or suppliers' business partners, this study probed both downstream and upstream supply chain mangers (Premkumar, Ramamurthy, & Nilakanta, 1994). This done was in accordance with the studies of Premkumar (1995) and Huang et al. (2008). Therefore, two sets of questionnaires were delivered by hand to the prospective respondents of each firm in the sampling frame in the period between the 15th of September 2015 to the 15th of January 2016.

Taking into account the low adoption rate of B2B EC in Jordan, respondents were probed for on their firms' intentions to adopt B2B EC with their key business partners. This study excluded responses from B2B EC adopters. In addition, fifteen cases of respondent's answers were excluded as the respondents did not answer more than 50% of the question items. Six observations had missing values, but the number of missing values per observation did not

[1] At the time of the study in September 2015, 1 Jordanian Dinar (JD) = 1.41 USD$.

exceed 2%. Therefore, mean value replacement was used instead of case wise deletions in treating such cases (Hair et al., 2014). In total, 239 valid responses were received from prospective respondents. Of the 239 valid responses, 114 responses were from upstream supply chain managers and 125 responses were from downstream supply chain managers. In total the response rate was 29%. About 63% of the respondents had reported sales turnover of greater than JD 15 million. With regard to the number of employees, about 51% of the responding firms had more than 250 employees. Non-response bias was measured by splitting the responses into an early response group and a late response group. The results of t-tests showed no significant mean differences between the two groups, indicating that a non-response bias was not an issue in this research. Table 1 summarizes the demographic characteristics of the respondents.

4. Measurements

To ensure greater convergent and discriminant validity, constructs and items that have been tested in previous studies were used. Perceived desirability was conceptualized as a global construct derived from three dimensions similar to Alsaad et al. (2015) and Chin and Gopal (1995). The first two dimensions are relative advantage and compatibility. Each of these dimensions was measured using five items adopted from Oliveira, Thomas, and Espadanal (2014) and Venkatesh and Bala (2012). The third dimension was complexity, which was measured using three items as adopted from Oliveira et al. (2014) and Premkumar and Roberts (1999). Organizational readiness was also a composite construct composed of two dimensions including: 1) IT sophistication and 2) financial resources. IT sophistication was measured using six items adopted from Chwelos et al. (2001); meanwhile financial resources was measured using three items. Top management support was adapted from Liang and Saraf (2007) and comprised five items. The measures of competitive pressure were obtained from Thong (1999). Finally, trust was measured by three sub-dimensions, namely, 1) benevolence, 2) integrity and 3) competences. The measurement of those constructs were adopted from McKnight et al. (1998) and Rai et al. (2009). A complete list of items adopted for the data collection purpose is reported in Appendix 1.

Table 1
Demographic profile of respondents (n = 239).

Characteristics	Details	Percent
Position	Owner/Proprietor	3.4
	Managing Director	11.4
	Senior Manager	26.7
	Manager	31.35
	Senior staff and others	24.95
	Missing	2.15
Experience in current position	Less than 5 years	44.05
	5–10 years	27.95
	11–15 years	11.6
	More than 15 years	14.75
	Missing	1.65
Education	Diploma or below	3.35
	Bachelor's degree	50.75
	Master's degree	41.7
	PhD	3.4
	Missing	1.6
Gender	Male	90.15
	Female	9.15
	Missing	1.6
Age	Less than 30 years	15.7
	30–39 years	49.25
	40–49 years	22.95
	50 years and above	10.8
	Missing	2.6

To ensure clarity of the questionnaire and accuracy of the responses provided, the definition and description of B2B EC adopted in this study was specified clearly on the survey instrument. The B2B EC was operationalized as all Internet technologies that enable inter-organization linkage in line with Sila (2013). The definition has been widely used in B2B EC literature, see for example (Bell, Lai, & Li, 2012; Hsu et al., 2006; Lai, Tong, & Lai, 2011; Liu, Ke, Wei, Gu, & Chen, 2010; Liu, Sia, & Wei, 2008; Zhu, Kraemer, & Xu, 2003). This operational definition was used because, although a myriad of different manifestations of B2B EC technologies exist, researchers suggest that some of these manifestations are similar in nature to one another (Robey, Im, & Wareham, 2008; Sila, 2015), share similar antecedents (Hameed, Counsell, & Swift, 2012a; Hameed, Counsell, & Swift, 2012b; Robey et al., 2008; Sila, 2015), and may thus be functional substitutes for one another (Huang, Gattiker, & Schroeder, 2010; Sila, 2015; Zhu et al., 2003). However, due to the cultural differences, this study modified several items to suit the context of the current study. A translation of the survey instrument from English into Arabic was carried out based on the guidelines that Brislin suggested (1986). A pretest study was conducted with seven academic representatives who are familiar with information technology. Minor changes were made to the questionnaire based on the pretest in order to improve questions clarity. All of those measurements were evaluated on a 7-point Likert-type scale (i.e., "1" = strongly disagree; "7" = strongly agree).

5. Data analysis

Partial Least Squares (PLS) was used to estimate the proposed model. As a structural equation modeling (SEM) technique, PLS can simultaneously test the measurement model and the structural model (Gefen, Rigdon, & Straub, 2011; Ringle, 2012). Likewise, PLS has the potential to work with very complex models with a hierarchical structure model and a high number of indicators, constructs, and relationships (Chin, 2010; Hair, Ringle, & Sarstedt, 2011; Henseler, Ringle, & Sinkovics, 2009; Wetzels, Odekerken-Schröder, & Oppen, 2009). Moreover, PLS avoids small sample size problems and has less strict assumptions of normality distribution and error terms (Chin, 2010; Sarstedt, Ringle, Smith, Reams, & Hair, 2014). Therefore, it can be useful in some conditions when other approaches are not. It is on this premise that this technique and approach was used for the purposes of this study.

The first step in PLS analysis process is to conduct reliability and validity tests of the measurement model. Because the measurement model in this study contains higher order constructs (Perceived desirability, Trust, and Organization readiness), the reliability and validity of all first-order constructs measures were initially estimated. The Cronbach's alphas, Average Variance Extracted (AVE), and Composite Reliability (CR) for each of the first-order constructs were estimated. As shown in Table 2 below, the results demonstrate that the Cronbach's alphas of all items and the composite reliability of all constructs were in the range of the threshold of 0.707 which confirmed the reliability of the first-order constructs model.

With regard to convergent validity, the results shown in Table 2 indicate that the AVE's of all constructs were above the conventional value of 0.5. Meanwhile, the square roots of the AVEs for all first-order constructs were calculated to estimate the discriminant validity as presented in Table 3. The results show that the square roots of the AVE scores were all greater than the correlations among the constructs, demonstrating discriminant validity. Finally, collinearity between the constructs were examined. The variance inflation factor (VIF) is a regularly used approach to detect multicollinearity (Petter, Straub, & Rai, 2007). VIF values of all

Table 2
Means, item loading, ICR, AVE, and VIF.

Construct name	Mean	CR	AVE	VIF	Item name	Item loading
intent to adopt (AD)	4.6	0.94	0.85	1.35	Adopt1	0.91
					Adopt2	0.95
					Adopt3	0.91
Compatibility (CB)	4.85	0.90	0.64	1.82	Compat1	0.81
					Compat2	0.84
					Compat3	0.79
					Compat4	0.77
					Compat5	0.81
Complexity (CX)	3.5	0.87	0.70	1.04	Compx2	0.79
					Compx3	0.89
					Compx4	0.84
Financial resources (Fin)	4.8	0.90	0.75	1.85	Fin1	0.84
					Fin2	0.89
					Fin3	0.87
Top management support (Top)	4.6	0.93	0.73	2.63	Practis1	0.87
					Practis2	0.88
					Practis3	0.82
					Belif1	0.86
					Belif2	0.84
Competition Pressure (PR)	4.45	0.85	0.66	1.72	Prusser1	0.80
					Prusser2	0.80
					Prusser3	0.84
Relative advantage (RA)	5.45	0.92	0.71	1.97	Relativ1	0.89
					Relativ2	0.85
					Relativ3	0.89
					Relativ4	0.69
					Relativ5	0.89
IT sophistication (Sof)	5.7	0.93	0.71	1.95	Sof1	0.83
					Sof2	0.84
					Sof3	0.81
					Sof4	0.89
					Sof5	0.86
					Sof6	0.84
Benevolence (Ben)	4.75	0.92	0.81	3.18	Trust1	0.92
					Trust2	0.89
					Trust3	0.90
Integrity (IN)	4.6	0.91	0.79	4.72	Trust4	0.88
					Trust5	0.88
					Trust6	0.91
Competences (CP)	4.7	0.94	0.84	3.52	Trust7	0.92
					Trust8	0.93
					Trust9	0.91

Table 3
The AVEs square roots.

	AD	CB	CX	Fin	PR	RA	Sof	Ben	IN	CP	Top
AD	0.92										
CB	0.30	0.81									
CX	−0.15	−0.14	0.84								
Fin	0.34	0.52	−0.06	0.87							
PR	0.39	0.40	0.01	0.44	0.82						
RA	0.35	0.51	−0.15	0.50	0.41	0.85					
Sof	0.30	0.49	−0.08	0.42	0.42	0.61	0.85				
Ben	0.31	0.39	−0.04	0.45	0.46	0.43	0.44	0.90			
IN	0.25	0.45	−0.06	0.37	0.37	0.36	0.39	0.78	0.89		
CP	0.28	0.39	−0.01	0.36	0.35	0.38	0.41	0.71	0.83	0.92	
Top	0.47	0.56	−0.07	0.62	0.61	0.51	0.58	0.43	0.43	0.46	0.78

Shaded values are to indicate that of Square root of AVE of a construct is greater than inter-construct correlations.

constructs were less than the threshold of five. Which indicates that no collinearity issue exists. Taken together, the analyses discussed above provide evidence of the soundness of the first-order measurement model of this study.

The second-order measurement model was evaluated using the repeated indicator approach in the next step. The hierarchical constructs have been modeled. In the hierarchical models, the second-order construct of perceived desirability was formed by evaluating innovation attributes including Relative advantage, Compatibility, and Complexity (Alsaad et al., 2015). Such evaluation matches the reflective-formative measurement type (Becker, Klein, & Wetzels, 2012; Polites, Roberts, & Thatcher, 2012). This type of measurement was analyzed and interpreted similar to formative constructs. The loading of first-order constructs on a higher-order construct should be sufficient and significant (Becker et al., 2012; Petter et al., 2007; Polites et al., 2012).

As presented in Table 4, the loadings of Relative advantage, Compatibility, and Complexity were sufficient and significant;

Table 4
Hierarchical measurement model results.

Construct Name Second order	Component name (First-order)	Path coefficients/loading	P values
Perceived desirability[a]	Relative advantage	0.608	0.00
	Compatibility	0.509	0.00
	Complexity	−0.116	0.00
Organizational Readiness[a]	IT sophistication	0.820	0.00
	Financial resources	0.322	0.00
	Benevolence	0.898	na
Trust[b]	Integrity	0.948	na
	Competences	0.921	na

Notes:
[a] Formative second-order construct.
[b] Reflective second-order construct, and na: not applicable.

wherein the loading of Relative advantage was 0.608 and significant at the 95% confidence level ($p < 0.00$); meanwhile the loading of Compatibility and complexity was 0.509 and −0.106 respectively and significant ($p < 0.00$). The above figures demonstrate the reflective-formative property of perceived desirability. Similar to perceived desirability, the organizational readiness construct was derived from financial resources and IT sophistication constructs (Rai et al., 2009); thereby the higher-order construct of organization readiness was operationalized as a reflective-formative measurement type (Becker et al., 2012; Polites et al., 2012). As shown in Table 4, the loading of both financial resources and organizational readiness was sufficient and significant; where the loading of financial resources was 0.322 and significant ($p < 0.00$); meanwhile the loading of IT sophistication was 0.820 and significant ($p < 0.00$). The above figures confirm the reflective-formative property of organizational readiness. In contrast, trust should shape the value of its first-order dimensions.

Thus, in line with Carter, Wright, Thatcher, and Klein (2014), this current study models the higher order construct of trust as a reflective-reflective measurement type. Accordingly, the analysis and interpretation of the second-order of trust is comparable to a first-order reflective measurement model. Hence, the loadings of first-order construct on the higher-order construct should be more than the threshold value of 0.707. As shown in Table 4, the loading of benevolence, integrity, and competences on trust were 0.898, 0.948, and 0.921 respectively. Furthermore, trust's AVE (0.695) and CR (0.953) were above the cut-off values of 0.5 and 0.707, respectively (Chin, 1998; Fornell & Larcker, 1981; Wilson, 2010). All of these figures prove the property of trust as a reflective-reflective higher-order construct. Altogether the soundness of the measurement model is demonstrated, and thus the study can safely proceed to an evaluation of the structure model.

To evaluate the structure model and to test the proposed hypotheses, the main effect model in which the moderator was not included was examined. Afterward, the moderation effect was tested in another model known as an interaction model (Hair et al., 2014; Wilson, 2010). In the main effect model, the PLS bootstrapping procedures with 5000 resampling was employed using SmartPLS 2.0. The results are presented in Table 5. In terms of the structural paths, the results of both standardized path coefficients and their significance values were used for hypotheses testing. As seen in Table 5, perceived desirability was positive and significant ($\beta = 0.171$; $p < 0.05$) and influenced a firm's intention to adopt B2B EC, supporting H1. As for the two hypotheses regarding Organizational factors, Top management support was positive and significant ($\beta = 0.298$; $p < 0.00$), meanwhile Organizational readiness was not ($\beta = 0.039$; $p > 0.05$), suggesting support for H3 but rejecting H2. Perceived competitive pressure had a weight of 0.156 and was significant ($p < 0.05$), supporting H4. Finally, the PLS regression result showed that the model accounted for 24.9% of the variance.

To answer RQ1 and RQ2 about the moderating role of trust, an interaction model was initiated by creating four interaction latent constructs representing the interaction term between predictors (TOE related factors) and trust on the criterion variable (intention to adopt). The model was then tested using a bootstrapping procedure with 5000 resampling. The results of bootstrapping resampling procedures are presented in Table 6. With the exception of an interaction term between trust and perceived desirability, the path coefficients for all interaction terms were relatively weak (less than 0.1) and insignificant ($p > 0.05$). The negative moderation path coefficient of the interaction term between trust and perceived desirability ($\beta = -0.193$, $p < 0.05$) provided initial insight that trust negatively moderated the relationship between perceived desirability and intent to adopt. This would support the argument that trust has negative effect on adoption determinants due to rigidities embedded in a high level of trust.

Fig. 2 shows the interaction pattern using Aiken, West and Reno (1991) procedure of computing slopes one standard deviation above and below the mean of trust. Fig. 2 shows the relationship between perceived desirability and intent to adopt under high and low levels of trust. This result implies that, with respect to average levels of trust and perceived desirability, perceived desirability coupled with trust exerts joint negative effects on intent to adopt B2B EC. That meant that perceived desirability was less predictive of intention as trust became stronger. Overall, the results showed that the inclusion of the interaction terms improved the model productivity whereby the R-square increased from 0.249 to 0.314.

6. Discussion

This study examined a context-specific model utilizing the TOE framework and suggesting trust as a moderator. The outcomes

Table 5
Results of the main effect model.

Independent variable	Path coefficient	Standard error	T statistic	P value
Perceived desirability (PD)	0.171	0.077	2.211	0.028
Organizational readiness (OR)	−0.039	0.050	0.789	0.431
Top management support (Top)	0.298	0.079	3.785	0.000
Competition pressure (PR)	0.156	0.077	2.036	0.042

Table 6
Results of the interaction model.

Interaction term	Path coefficient	Standard error	T statistic	P value
PD × Trust	−0.193	0.086	2.252	0.025
PR × Trust	0.057	0.060	0.950	0.342
OR × Trust	0.004	0.060	0.060	0.952
Top × Trust	−0.027	0.073	0.367	0.714

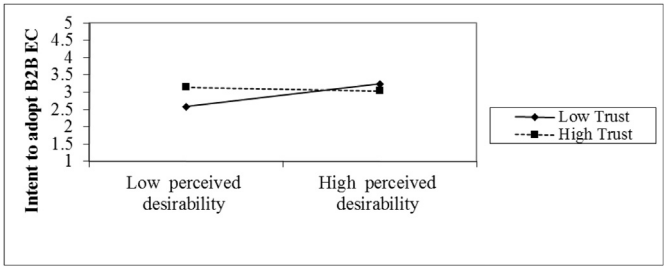

Fig. 2. The interaction term between perceived desirability and trust on intention to adopt.

showed that, although not all covariates were significant, the results are consistent with the prediction of the TOE framework and IDT theory. With regard to the role of perceived desirability, the results showed a significant and positive relationship with intention to adopt B2B EC. This is in agreement with Ansari and Zajac (2010) and Rogers (2003) who said that the connection between the presumed economic benefits and the likelihood of adoption was one of the most extensively reported findings in the innovation diffusion literature. In fact, potential adopters rationally behave and actively carry out an assessment of the innovation attribute to build cognition about the appropriateness and desirability of B2B EC adoption. In this sense, B2B EC will be adopted when its attributes are perceived to fit the potential needs and provide required features for an adopter (Rogers, 2003; Tarofder, Marthandan, Mohan, & Tarofder, 2013; Venkatesh & Bala, 2012; Yoon & George, 2013; Zhu et al., 2006). Furthermore, the result indicates that top management support positively and significantly influences a firm's intention to adopt B2B EC. This is an indication that to increase the adoption rate, top management support is needed (Liang & Saraf, 2007; Premkumar et al., 1994; Zheng et al., 2013). In contrast to expectations, organizational readiness was insignificantly related to adoption intention. One possible explanation is that readiness should be translated into a perception of efficacy in order to influence the adoption of innovation. Unsworth, Sawang, Murray, Norman, and Sorbello (2012) argued that it was not simply the available resources that an organization holds that are conducive to adoption behavior. Instead, the perception that organizational resources offer greater competences and capabilities in dealing with innovation adoption is the rationale behind the role of organization readiness. Hence, firms with a great deal of technical know-how and financial resources are less likely to adopt an innovation if such resources do not translate into a perception of efficacy. Finally, competitive pressure is strongly predictive of adoption intention. This suggests that competition is a major driver of a firm's intention to innovate. This implies that a firm views that the adoption of B2B EC can be a source of competitive advantage under a high level of competition.

On the other hand, the interaction model was partially proven. Only the interaction term between trust and perceived desirability was found to be negative and significant. This suggests that, although trust promises benefits in inter-organizational settings, trust can also produce undesired rigidities in an existing relationship. In this sense, having a well-established cognitive-based attitude toward innovation may limit innovative activities that operate in a context in which trust is well developed. Given rigidities inherited in the presence of trust, a firm's flexibility in acquiring a new technology may be hampered rather than enabled even if a firm has the technological motivations to do so. Moreover, in a context in which interpersonal relationships dominate in B2B settings, as indicated by the importance of trust, the technological motivations toward adoption are less likely to be important. Such rigidities reduce a firm's flexibility in acquiring and adopting new technology that seems to be the desirable choice. In other words, once inter-organizational routines become institutionalized between the two parties, firms are unlikely to replace their routines solely based on economic motivations. Therefore, predicting the adoption of an innovation requires a detailed understanding not only of the innovation attributes, but also of social and inter-organizational contexts or existing business relationships such as trust between partners.

Unlike perceived desirability, the interaction terms between trust and environmental factors were not supported. One potential explanation for this result could be derived from an Inertia theory insight. The notion of inertia within an organizational context is that organizations establish and maintain specific routines and develop critical competencies that fit the organizations' strategic orientation as well as its internal external environments. While firms operate for very long period of times without fundamental change, they also become more complex and show greater interdependence on well-developed routines and competencies. Such rigidities build resistance to fundamental change (Gresov et al., 1993; Hannan & Freeman, 1984; Kelly & Amburgey, 1991). Nevertheless, Gresov et al. (1993) and Tushman and Anderson (1986) have suggested that, in a highly competitive environment, change can occur in a continuous and incremental fashion in order for an organization to stay ahead of its rivals. When developed routines and competencies are gradually eroded, periods of equilibrium are punctuated by radical reorientations. Thus, most existing routines and competencies are changed together (Gresov et al., 1993; Tushman & Anderson, 1986). Accordingly, the argument can be made that, where organizations face a high competitive environment, they already would have resolved the inherited rigidities in a high level of trust.

Finally, the results also showed that the interaction terms between the trust and organizational factors were weak and insignificant. This could be attributed to the fact that organizational factors are analogous to the amount of control that an organization has over performing a desirable action (Awiagah, Kang, & Lim, 2015; Unsworth et al., 2012). Thus, the real motivation in utilizing organizational resources is contingent upon the existence of needs, goals, or incentives to innovate (Zheng et al., 2013). As the concept of inertia denotes a tendency not to move or to act (Gresov et al., 1993), rigidities inherited in trust are more likely to influence behavioral incentives (i.e., perceived desirability) rather than behavioral controls.

7. Research implications

Several important theoretical and practical implications can be inferred from the results of this study. One vital contribution stems from providing insights into the contextual factors that shape functional relationships between determinants of adoption. In previous research on technology adoption, scholars have paid insufficient attention to the processes constraining the diffusion of B2B EC. Instead, they have implicitly assumed that existing relationships between trading partners are flexible enough to be modified and dissolved easily as a result of comparing economic

benefits between current and new technology. Such a stream of thought, however, overlooks how the nature of the relationships between trading partners including trust affects the meaning of adoption behavior as well as the functional relationships between adoption determinants.

The study also found that the intention to adopt was influenced not only by the technology itself but also, more importantly, by the properties and arrangements of existing relationships between and among trading partners. The study integrated IDT, TOE, and Inertia theory to capture both motivational and relational aspects of organizational responses to the adoption of B2B EC. IDT theory and the TOE framework emphasize a rational cost-benefit calculation in acquiring new technologies. They assume that an organization with a greater need for technological change tends to dissolve its current business routines and adopts new technology with less difficulty. Meanwhile, the inertia perspective stresses that an organization experiences difficulty in doing so to the extent that it is constrained by routine inertia. This approach is fresh in the context of B2B EC adoption and addresses a recent call to augment adoption theories with other relevant theoretical point of views (Fichman & Carroll, 2004). Additionally, in contrast to the traditional view of trust as an enabler of innovation adoption, this work highlights a dark side hampering established trust-based relationships rather than enabling the creation of the desired effect on innovation adoption. Up till now, such a negative side of trust has not been explored empirically in innovation diffusion research, despite several researchers' claims of such a relationship (Kim et al., 2006; Thorgren & Wincent, 2011).

In addition, the examination of the determinants of B2B EC in the Jordanian context is an interesting case study that can yield insights into many other countries in similar situations such as in Arab countries. The complex societal beliefs and values of the Arab world provide a rich setting in which to examine the hypothesized influence of culture on information technology adoption (Straub, Loch, & Hill, 2001). In such contexts, social characteristics may be different from Western societies in which previous studies have been conducted. The social aspect inherent in traditional ways of doing business is not easily exchangeable with IT-enabled innovations that offer higher efficiency in these contexts (Driedonks et al., 2005; Kshetri, 2010). The preference in the Arab culture for face-to-face dealings, for instance, mitigates against the use of certain technology interfaces as does the cultural tendency to build consensus and create family-like environments within organizations. Anthropological studies suggest that much of the technology designed and produced in developed countries is ethnocentric, that is, culturally-biased in favor of their own social and cultural systems (Straub et al., 2001). One finding of this current study, that rigidities inherited in the presence of trust affect a firm's flexibility in acquiring a new technology even if a firm has the technological motivations to do so, supports the above claim, particularly in Arab context.

Practically speaking, the implications of the findings do not suggest that trust among trading partners should be avoided in the Jordanian context. Instead, to explore new opportunities successfully, potential adopters should develop and design a balanced-relationship structure that ensures the positive side of trust, which should be also flexible enough to help them explore and search out a wider range of opportunities. Another important implication that emerged in view of the results of the present study is related directly to technology vendors. Technology vendors could embed computer-mediated communication (CMC) tools (i.e., instant messaging, message box, and feedback systems) that both enable and emphasize the social aspects of business transactions. Ou, Pavlou, and Davison (2014) suggest that CMC tools can mimic traditional interactive face-to-face communications and enable trust by enhancing the perceptions of trading partners of interactivity and the presence of a counterparty. Ou et al. (2014) considered trust to be an outcome of CMC tools.

8. Limitations and future research

In interpreting the research results, keeping several issues in mind is important, as no research exists without limitations. This study presumes that inter-organizational rigidities and the preference of interpersonal relationship are embedded in a high level of trust. Future studies might look into the moderating role of other indicators of inter-organizational inertia such as network age, network size, and status position in network. Additionally, because trust as antecedent of organizational behavioral is less pronounced in a large body of the literature, the human element might mediate the influence of trust. Further research is definitely required to enhance and verify the validity and applicability of this outcome by applying it in different contexts.

Appendix 1. Measurement items

Relative Advantage:
Relativ1: Adoption of B2B EC will manage our business operations in an efficient way.
Relativ2: Adoption of B2B EC will perform specific tasks more quickly.
Relativ3: Adoption of B2B EC will improve the quality of our operations.
Relativ4: Adoption of B2B EC will offer new opportunities.
Relativ5: Adoption of B2B EC will increase our business productivity.
Compatibility
Compat1: Adoption of B2B EC fits the work style of the firm.
Compat2: Adoption of B2B EC is fully compatible with current business operations.
Compat3: Adoption of B2B EC is compatible with our firm's corporate culture and value system.
Compat4: Adoption of B2B EC is compatible with the existing hardware and software in our firm.
Compat5: Adoption of B2B EC is consistent with our business strategy.
Complexity
Compx1: Adoption of B2B EC requires a lot of mental effort.
Compx2: Adoption of B2B EC is too difficult to be incorporated in our business operations.
Compx3: Adoption of B2B EC is too difficult for our employees.
Information Technology Sophistication
Please indicate the extent to which Information Technology is important for the fulfillment of the following objectives:
Sof1: Operational cost reduction.
Sof2: Productivity improvements.
Sof3: Improving quality of decision making.
Sof4: Improving access to information.
Sof5: Improving competitiveness.
Sof6: Improving service to customers.
Financial Resources:
Fin1: We have financial resources to adopt B2B EC.
Fin2: We have enough financial allocations to adopt B2B EC.
Top Management Beliefs
Belief1: B2B EC has the potential to provide significant business benefits to the firm.
Belief2: B2B EC will create a significant competitive arena for the firm.
Top Management Participation
The senior management of our firm actively:
Practis1: articulates a vision for the organizational adoption of B2B EC.
Practis2: formulates a strategy for the organizational adoption of B2B EC.
Practis3: establishes goals and standards to monitor the adoption of B2B EC.
Competitive pressures
Pressure1: Our firm thinks that B2B EC has an influence on competition in our industry.
Pressure2: Our firm is under pressure from competitors to adopt B2B EC.
Pressure3: Some of our competitors have already started using B2B EC.
Trust: With regard to your firm's key business partner, please rate the following statements:
Trust1: They would act in the best of our interest

(*continued*)

Trust2: If we required help, they would do their best to help.
Trust3: They are interested in our well-being, not just their own well-being.
Trust4: We are comfortable in relying on them to fulfil our obligations.
Trust5: We feel comfortable in doing business on the Internet with them.
Trust6: We always feel confident that we can rely on them to do their part when we interact with them.
Trust7: They are competent at serving us.
Trust8: They do a good job at meeting our needs.
Trust9: They are good at what we want.

At what stage of B2B EC technology deployment is your firm currently engaged?

- Currently using B2B EC systems
- Have evaluated, and plan to adopt
- Have evaluated, but do not plan to adopt
- Currently evaluating (e.g., in a pilot study)
- Not considering

Intent to adopt

If our firm is currently not adopting B2B EC, ***please indicate your level of agreement with the following Statements:***

Adopt1: Our firm intends to adopt a B2B EC with our key business partner in near future.
Adopt2: It is likely that our firm will take some steps to adopt B2B EC with our key business partner in the near future.
Adopt3: We believe it is worthwhile for our firm to adopt B2B EC with our key business partner in the near future.

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