

Impacts of employee participation and trust on e-business readiness, benefits, and satisfaction

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Abstract An increasing number of firms have invested large sums in implementing electronic business (e-business). Nowadays, while the e-businesses are fostering rapid industrial growth, employees are the one who factually engage with information exchange, communication and support e-business processes. However, prior literature has paid scant attention in determining e-business value and its drivers from employee perspective. Thus, the present study attempts to investigate how user participation and trust drives e-business value in terms of e-business readiness, e-business benefits, and e-business satisfaction. For this sake, data collected from 143 employees at Taiwanese IT related firms and analyzed with partial least square (PLS) structural equation approach reveal that trust and user participation were significant precursors of employee e-business satisfaction. The results strongly support the contention that trust directly affects e-business satisfaction, and indirectly affects it through e-business readiness and e-business benefits. The research model and findings will help managers implement e-business successfully and offer valuable references for researchers interested in developing related theories.

Keywords E-business · Participation · Readiness · Trust · Satisfaction · Value

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1 Introduction

In today's rapidly changing information era, information system/information technology (IS/IT) has been considered to have significant effects not only on daily life, but also on business operations. Electronic business, an enterprise with the capability to exchange value (goods, services, money, and knowledge) digitally or via computer networks (Hackbarth and Kettinger 2000; Jones et al. 2000; Xu and Koronios 2004/2005), appears to be an asset firms can leverage to create greater benefit for customers. It integrates different kinds of information technology to efficiently streamline complex commercial activities and optimize business processes, as well as strengthen the relationships among enterprises, customers, employees, business partners, and suppliers (Hackbarth and Kettinger 2000; Kalakota and Robinson 2001; Laudon and Laudon 2005; Wei et al. 2009). At the same time, investment in and integration of information systems/technologies, and quantifying the value contribution of e-business, has become an issue for managers seeking to justify the enormous expenditures involved in new IS/IT investment.

While previous research has proposed a variety of measures of information technology value—productivity, business profitability, and consumer surplus (Hitt and Brynjolfsson 1996), there is a paucity of published research from the perspective of the internal customer: the employee. Hence, this research explores measurement of e-business value in terms of e-business readiness, e-business benefits, and e-business satisfaction, for several reasons. First, e-business readiness is an energy indicator for employees to embrace change (Lai and Ong 2010). It is an intangible asset and value for managers since employees often need to confront changes led by the introduction of new technology or flatter organizational structure. Second, for evaluation of IS success and effectiveness, Cyert and March (1963) first proposed the concept of user satisfaction (US) as a surrogate measure of system success. It has since often been used as a surrogate measure of management information systems (MIS) success/effectiveness (Bailey and Pearson 1983; Doll and Torkzadeh 1988; Melone 1990). Hence, e-business satisfaction perceived by employees can be used as a surrogate measure of e-business success, representing one kind of e-business value. Finally, because e-business benefits, viewed similarly as the individual impact, one dimension of e-business value (Zhu et al. 2004), represents the real value advantage e-business can create for employees: it is very important for “*practical*” employees.

For most firms, becoming an e-business is an evolutionary journey from the initial to final stages (Earl 2000; Hackbarth and Kettinger 2000). This kind of transformation may involve adopting new technologies, redesigning business processes, and restructuring management (Craig and Jutla 2001; Earl 2000; Hackbarth and Kettinger 2000; Laudon and Laudon 2005). To reduce the turbulence caused by change and enable firms to transform themselves into e-businesses, change must be supported by a critical mass of stakeholders, including customers, partners, and employees (Benjamin and Levinson 1993; Craig and Jutla 2001), particularly employees, since they are the frontline staff responsible for execution of job tasks. However, managers should carefully assess employee technological and psychological maturity to “embrace” e-business since the changes involved in

e-business implementation will often trigger significant resistance to change and perhaps lead to the failure of the e-business when (1) employees do not understand why change is desirable; (2) they doubt the company's ability to achieve the desired change; and (3) they are not ready to use new IS/IT (Beckhard and Harris 1987; Lai and Ong 2010). Thus, when facing change, employee trust beliefs—belief that the e-business will be successfully implemented and bring better service, along with the level of technology readiness, readiness to use new IS/IT, will affect the success of e-business implementation, and in turn impact the value creation of e-business.

Obviously, since trust may affect employee perceptions of readiness, benefits, and satisfaction of e-business, it is imperative for managers and researchers to understand how they affect e-business value. Although e-business has received increasing attention from researchers in recent decades, including investigations of the benefits of the deployment of new technology (Damanpour and Damanpour 2001), value-added created using e-business (Amit and Zott 2001), the differences between and classifications of traditional industries and e-business (Swaminathan and Tayur 2003), gaining competitive advantage by e-business (Phan 2003), and trust (Benbasat et al. 2008; Jones et al. 2000), there is a paucity of research on the factors that affect the value creation of e-business, particularly from the employee perspective.

Given this research background, this paper aims to explore how employee beliefs about trust affect e-business value: e-business readiness, e-business benefits, and e-business satisfaction. Managers and researchers may use our model and findings to better understand the factors that affect e-business success. The remaining sections of this paper are organized as follows. First, significant arguments of various studies on participation, trust, and e-business value are reviewed, and then hypotheses are proposed. In what follows, reliability and validity of the developed research model were evaluated and participation and trust were tested, respectively, to determine their effects on e-business value. The following section discusses applications and implications for management. Finally, conclusive remarks about the paper are addressed.

2 Literature review

Extant literature has emphasized intention to use as an important construct (McKight et al. 2002; Nicolaou and McKnight 2006; Venkatesh et al. 2003), however, viewed as an element of pre-adoption studies those fundamentally based on cognition or indirect experience. Pre-adoption attitude is generally based on perceptions of usefulness, ease of use, result demonstrability, trialability, and visibility (Karahanna et al. 1999), and hence intention to use (Legris et al. 2003; Venkatesh et al. 2003). Post-adoption beliefs are rested upon past experiences that facilitate an employee to evaluate technology clearly and confidently. Furthermore, post-adoption attitudes, e.g., e-business readiness, benefits, and satisfaction, are rested upon instrumentality beliefs of usefulness and perceptions of image enhancements (Karahanna et al. 1999). Under this background, this present study

mainly focuses on investigating relationship between trust and e-business values in the post-adoption stage of e-business from employee perspective.

2.1 E-business in Taiwan industry

Since past few decades, Taiwanese industries started to develop in the form of OEM/ODM. However, with government's initiative, Taiwanese industries became investment-oriented, leading to the prosperity of a fast growing information industry that began in 1992 (Tsai and Hung 2006). Due to the limited local market, Taiwanese companies are more dependent on global market. Further, large numbers of Taiwanese SMEs moved their operations overseas to low-cost production destinations, e.g., Vietnam, China. Nowadays, their medium/long-term strategy is to gradually decrease the OEM/ODM ratio but building own brand (Tsai and Hung 2006). Ministry of Economics (MOE, Taiwan) even pointed out that transforming to e-business has become imperative since both firms and employees can heavily rely on it. Furthermore, e-business can foster firms' competence to develop own brand and expand internationally. E-business delivers kinds of benefits to firm and its employees. E-business enables the firms to create a virtual business, where their business can be reached worldwide, exceeding the national. Thus, it can not only increase the sales of the business, where the products and services can reach to a wider range of customers, from different demographic to different nationality but also enhances competitiveness, profitability and sustainability of the firm (Ang and Husain 2012). On the other hand, Benefits to employees include structured access to enterprise information, common and personalized views, as well as collections of portal elements; improvement in organizational information gathering, as well as knowledge acquisition and management; improvement in productivity and in corporate communication (Urbach et al. 2010).

Implementing e-business implies and requires kinds of changes such as change of practice in dealing with business partners, change of the way in which products and services are delivered, and change in skills of the staff (Kolaric et al. 2011) even it poses some social and economic threats (Kundi and Shah 2009). However, employees nowadays have started realizing efficiencies of e-businesses and attitudes of employees are seen as a necessary help in establishing an adequate design of e-business in public services (Kolaric et al. 2011). In the phase of remarkable market fluctuations, and with intensively international competition, Taiwanese employees are also expected to understand significance of e-business in sustaining position of the firm into international market and hence, their employment. Furthermore, Taiwanese organizational culture is influenced by Confucianism which depicts cultural values such as diligence, frugality, harmony, loyalty, education and respect, employees are motivated to embrace the corporation's vision and create good peers relations, further affecting employees' attachment to their organization (Wu 2003). Conceivably, Taiwanese employees are likely to have homogenous objectives with the firm they work and are willing to embrace e-business.

2.2 Impacts of participation and trust on e-business readiness, e-business benefits, and e-business satisfaction

For e-business success, capabilities of organization, e-readiness, and participation are very important (Fahey et al. 2001; Kundi and Shah 2009; Urbach et al. 2010). User participation not only improves communication and enable better utilization of information but also enhances job skills and understanding of employees (Doll and Torkzadeh 1989). The benefits of participation are attributed to greater trust, greater feelings of control, greater identification with the organization, and higher goals. Eventually, it enhances trust and contributes to a sense of ownership and control, improving system acceptance and commitment. Upon motivation and active participation, employees reduce resistance to change and enhance acceptance of and commitment to decisions and changes (Doll and Torkzadeh 1989). The more the employees participate into e-business activities the more would be organizational e-business readiness.

Shaw (1997) considers the structure of establishing trust to include three key leverage points: leadership practice, organizational architecture, and organizational culture, and indicates three trust imperatives: achieving results, acting with integrity, and demonstrating concern. Previous studies have noted several characteristics of trust, such as uncertainty, riskness, and vulnerability (Doney and Cannon 1997; Ratnasingam 2005) and have defined trust as confidence in trading partners' reliability and integrity (Moorman et al. 1993; Morgan and Hunt 1994). It is conceivable that employees without trust will be concerned about the introduction of e-business and behave as if they fear job change, doubt the future or service, be afraid of implementing new technologies, be reluctant to share information/knowledge, and refuse to collaborate with fellow employees. The more fears and concerns employees have, the less prepared they are to embrace e-business, implying that trust can lead to e-business readiness. Furthermore, Abdinnour-Helm et al. (2003) shows that allowing users sufficient discussion can reduce uncertainty and increase trust when implementing an enterprise resource planning (ERP) system, thereby enhancing organizational readiness. Bajaj and Leonard (2004) propose the CPT framework (culture-policy-technology) and indicate that trust will enhance e-commerce readiness at the country level. Hence, it can be seen that trust will enhance e-business readiness.

Trust is supposed to contribute employees' perceived e-business benefits due to the reduced time and effort necessary for job tasks because e-business can provide applications that enable employees to concentrate on more value-added job tasks, rather than double-checking errors on reports or verifying the correctness of sales and purchase orders, worrying about the privacy and security of confidential data, or worrying about system crashes. A study on technology infusion in service encounters support the notion that technology readiness has a very significant impact on perceived benefits (Bitner et al. 2000). On the other hand, Mayer, Davis, and Schoorman (1995) suggest that trust in a seller comprises three sub-dimensions: ability, benevolence, and integrity. These components have been empirically supported as influential aspects of consumer trust in a Web vendor (McKight et al. 2002). Recent research evidence indicates that ability beliefs are more influential

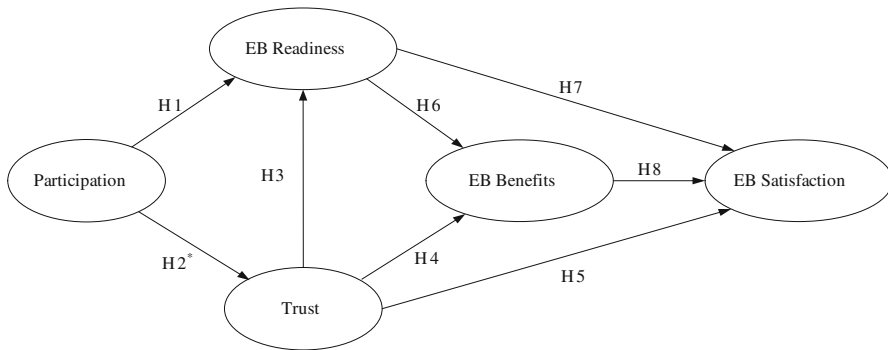


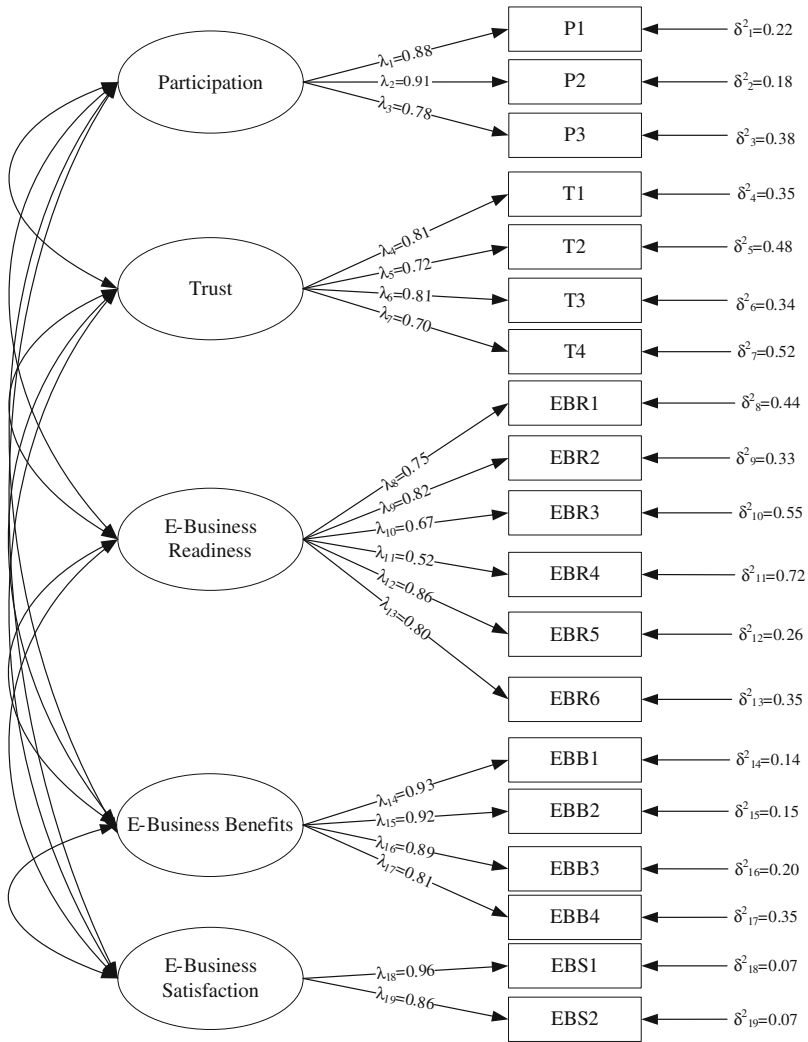
Fig. 1 Research model

than benevolent and integrity beliefs in determining online purchase intentions (Schlosser et al. 2006). Furthermore, Johnson et al. (2008) examine trust in technology from the standpoint of consumer beliefs about ability and performance of electronic channels and find that trust will significantly influence customers' overall satisfaction with self-service technologies (SSTs). A "trustworthy" e-business is able to deliver services and functions for employees on time to satisfy their needs, thus contributing to satisfaction with e-business. Previous research proposes similar arguments. For instance, Ratnasingam et al. (2002) indicate that technology trust contributes to e-commerce performance due to reduced transaction costs derived from the speed and automation of e-commerce technology, and that trustworthy firms are able to satisfy their end customers' needs by delivering the goods on time, thus contributing to increased customer satisfaction. Thus, we hypothesize (Figs. 1, 2):

- H1** Participation will positively affect e-business readiness.
- H2** Participation will positively affect trust.
- H3** Trust will positively affect e-business readiness.
- H4** Trust will positively affect e-business benefits.
- H5** Trust will positively affect e-business satisfaction.

2.3 Relationships among e-business readiness, e-business benefits, and e-business satisfaction

To improve business performance, firms are implementing enterprise applications (EAs), including enterprise resource planning systems (ERPs), supply chain management systems (SCMs), customer relationship management systems (CRMs), and knowledge management systems (KMs), in order to transform themselves into e-businesses. However, the introduction of e-business always leads to change in both the methods of task accomplishment and in the organizational structure, resulting in business process reengineering (BRP) to leverage the new technologies.



All λ s significant at *** $P < 0.001$

Fig. 2 Results of confirmatory factor analyses

Business processes that focus on optimizing tasks and structure must be reengineered to allow organizations as a whole to leverage new technologies to better meet market requirements, and take advantage of alliances or partnerships. E-business readiness is relevant for understanding the employee predisposition for embracing e-business. Conceivably, employee skills, competencies, and job security beliefs about the new task and structure will affect their attitudes toward embracing e-business, or their e-business readiness. Therefore, we expect that employees with a higher level of e-business readiness will be more willing to accept changes such as new information technologies, flatter organizational structures, and new task

methods, embracing e-business technologies that will increase their performance, gain benefits, and enable satisfaction with e-business. Accordingly, by examining e-readiness from the three aspects of ability to use information technology, the application of the Internet to facilitate the purchasing process, and the use of information systems to enhance supply chain management in the context of electronic marketplace (EM), Truong (2008) finds that the buyers with a higher e-readiness will have more advantages in exploiting the benefits of EMs, while less e-ready buyers will have to cope with more difficulties in the process of using EMs. On the other hand, Zhu et al. (2004) develop a construct of technology readiness, comprising three dimensions, including technologies in use, front-end Web site functionality, and back-end integration, which reflect the extent to which a given firm's technologies are ready to create value in conducting financial services. They show that technology readiness significantly affects e-business value, through impacts on individual performance. Also, Lin and Hsieh (2007) successfully demonstrate that technology readiness has significant effects on satisfaction with self-service technologies.

The link between e-business benefits and e-business satisfaction may be found in the literature on the Information System Success model (Davaraj et al. 2002; Rai et al. 2002; Seddon 1997). The more useful the enterprise applications, the more likely the employees are to be satisfied with them. Furthermore, the relationships between perceived usefulness (similarly viewed as e-business benefits) and user satisfaction are supported by research in different contexts (Davaraj et al. 2002). In the case of users interacting with organizational systems, the empirical evidence (Rai et al. 2002; Seddon 1997) supports the relationship between perceived usefulness and user satisfaction. Hence, we hypothesize:

- H6** E-business readiness will positively affect e-business benefits.
- H7** E-business readiness will positively affect e-business satisfaction.
- H8** E-business benefits will positively affect e-business satisfaction.

3 Research methodology

Measures in the questionnaire were carefully developed through a systematic procedure (Tull and Hawkins 1993). Prior to development of measures, it was vital to obtain information about exactly what information is required from target respondents to satisfy research objectives and who are the target respondents. For this sake, assessment of the items those would be adopted or developed to measure what it is supposed was significant. Since items were adopted from extant scholarly literature, it was indispensable to determine whether or not measure adequately reflect the real meaning of the underlying research concept. With the help of experts in the area of information management, content validity testing was made for detection of ambiguities and misinterpretations and pool of measures/questions was modified. Further, questions were not only formatted in logical manner but also drafted carefully in order to avoid confusions and minimize recording errors from

respondents. The survey was then subjected through a pretest, using employees working in technology industry. Finally, questionnaire was again subjected to modification after pretesting with the help of professors in information management discipline.

Data for this study were gathered using a questionnaire survey administered in enterprises that have implemented e-business in Taiwan. The definition of e-business varies among industries and is unclear because of the difficulty inherent in defining complex concepts. To circumvent this problem, we sifted out the enterprises with well-established IS/IT infrastructure and enterprise applications because they can reasonable be understood to be e-businesses, and were consistent with our research scope. We sent out 300 questionnaires to the respondents and received 143 completed questionnaires, for a response rate of 47.7 %. Respondents were employed from several international IT-related firms such as Taiwan Semiconductor Manufacturing Corporation (TSMC), United Microelectronics Corporation (UMC), AU Optronics Corporation (AUO), Vanguard International Semiconductor Corporation (VIS), International Business Machines Corporation (IBM), Galaxy Software Services Corporation (GSS), MiTAC Technology Corporation, and MicroTek International Inc. (MICROTEK). For conducting this research in Taiwan, these scales were translated into Chinese and then back translated and compared with the original to ensure translation equivalence by another bilingual assistant professor for a fundamental cross-cultural validation effort (Mullen 1995).

To confirm the content validity of the scales, the items must describe the concept about which generalizations are to be made. Thus, this study recasts items selected for measuring the constructs from previous investigations. Four items measuring e-business benefits were adapted from the study of Lai and Ong (2010). Items measuring trust were taken from previous validated inventories (McKington et al. 2002). This study developed six items for measuring e-business readiness, while another two items measuring e-business satisfaction were taken from Doll and Torkzadeh's inventory (1988). Each respondent was sent a 16-item questionnaire and asked to select the response which best describes her/his level of agreement with the statements, using a five-point Likert-type scale. Consistent with prior investigations into social and organizational behavior, we measured demographic variables including gender, education, and organizational position. Most respondents were engineers (process, software, and planning engineers), 90 % had more than 5 years of experience with computers, and the male-to-female ratio was approximately 1.33–1. Fifty percent had completed one college or university degree and 31 % had completed master degrees. Demographics are listed in Table 1.

4 Data analysis and results

The partial least squares (PLS) technique was used to test the research model. PLS is a regression-based technique that originates from path analysis (Wold 1985). However, it has emerged as a powerful approach to analysis of causal models comprising multiple constructs with multiple indicators. This approach facilitates testing of the measurement model and the structural model simultaneously. The PLS

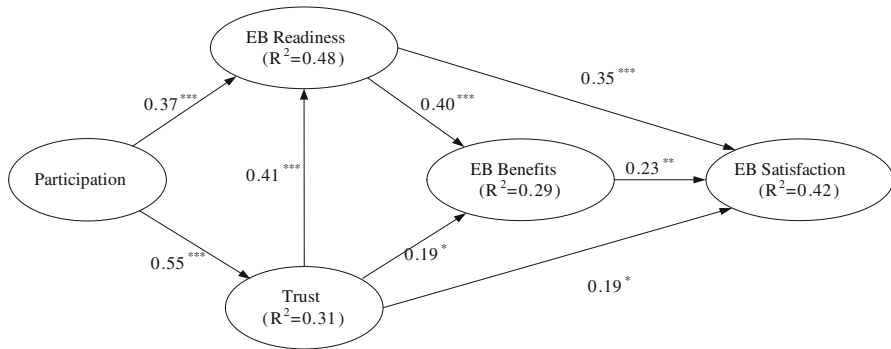
Table 1 Demographics of respondents

Item	Frequency	Percentage
Gender		
Female	61	43
Male	82	57
Age (years)		
Below 30	62	43
31–40	67	47
41+	14	10
Education level (degree)		
<Bachelor	27	19
Bachelor	72	50
Master	44	31
Computer experience (years)		
<5	10	7
6–10	80	56
10+	53	37

approach is superior to other structural equation modeling (SEM) approaches for this study because of its flexibility in handling distributional assumptions, small sample sizes, and strength in handling complex predictive models (Chin and Newsted 1999). It has been commonly used by recent studies (Westerlund and Rajala 2010; Xu and Quaddus 2012). Particularly, Urbach et al. (2010) investigated employee e-portal success while using PLS approach as it is considered as one of the best suited approach for management-oriented problems with decision relevance and focus on prediction. In this study, the Smart PLS program was used for this analysis and the bootstrap resampling method (900 resamples) determined the significance of the paths within the structural model.

There are two criteria to determine the minimum sample size: (1) ten times the number of indicators of the scale with the largest number of formative indicators (i.e. 60), or (2) ten times the largest number of structural paths directed at a particular construct in the inner path model (i.e. 80; Goodhue et al. 2006; Henseler et al. 2009). The sample size of 143 exceeded the recommended minimum sample size and thus was adequate for model testing. But recommendations on acceptable sample might be misleading. Hence, researchers must ensure that the sample size is large enough to study the phenomena of interest and support the conclusions (Henseler et al. 2009). Thus, sample size of this research could be considered satisfactory. Nevertheless, for given sample size it is typically hard to explicitly address statistical power of the model (Goodhue et al. 2006).

Following the analysis of the measurement mode using confirmatory factor analysis (CFA; Fig. 3), convergent validity was evaluated for the research model based on the three criteria recommended by Fornell and Larcker (1981). First, all of the indicator factor loadings (λ) should be significant. Second, construct reliability in terms of composite reliability (CR), internal consistency of the indicators measuring given factor, should exceed 0.80. CR is a measure of the overall



* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Fig. 3 Model testing results

reliability of a collection of heterogeneous but similar items, and is computed by taking the square of sums for standardized factor loadings divided by the square of sums of the standardized factor loadings and the error variance. Third, average variance extracted (AVE) varies from 0 to 1, and it represents the ratio of the total variance that is due to the latent variable. According to Bagozzi (1991), a variance extracted of greater than 0.50 indicates that the validity of both the construct and the individual variables is high (Roca et al. 2009). It assesses the amount of variance that is captured by the underlying factor in relation to the amount of variance due to the measurement error. In our study, factors having lower factor loadings (λ) i.e., less than a value of 0.5 were considered as inadequate contributors of the factors (Hair et al. 1998). According to the calculations, the λ -values for all items are significant at $P < 0.001$, the composite reliability of each factor is: trust = 0.85; e-business readiness = 0.88; e-business benefits = 0.94; e-business satisfaction = 0.96. In CFA each observed variable has an error term, or residual, associated with it that expresses the proportion of variance in the variable that is not explained by the factors. These error terms also contain measurement error due to the lack of reliability in the observed variables (Beckstead 2002). However, the AVEs of each factor were greater than 0.5 (minimum = 0.56), suggesting acceptable reliability and good convergent validity (Table 2). This indicates that collected data was reliable and acceptably free from sampling fluctuations. Hence, correlation structure among variables was consistent with hypothesized relationships (Beckstead 2002).

Next, the average variance extracted and shared variance, i.e., the square of the correlation between a pair of items, are calculated to evaluate discriminant validity. To meet the requirement for adequate discriminant validity, square root of AVE must exceed shared variance for all factors (Fornell and Larcker 1981). It is different from Campbell and Fiske (1959), this criterion is associated with model parameters and recognizes that the measurement error can vary in magnitude across a set of methods (indicators of constructs). Table 2 shows the matrix of covariance of the constructs where diagonal elements have been replaced by square root of

Table 2 Reliability, convergent validity, and discriminant validity of measurement model

Construct	CR	AVE	$\sqrt{\text{AVE}}$	Correlations				
				P	T	EBR	EBB	EBS
P	0.90	0.74	0.86	(0.86)				
T	0.85	0.58	0.76	0.55	(0.76)			
EBR	0.88	0.56	0.75	0.60	0.62	(0.75)		
EBB	0.94	0.79	0.88	0.55	0.44	0.52	(0.88)	
EBS	0.96	0.93	0.96	0.48	0.51	0.59	0.50	(0.96)

CR composite reliability, AVE average variance extracted (also in parentheses). The values in diagonal lines are square roots of relevant AVEs

AVE. It can be clearly observed that diagonal elements are greater than off-diagonal elements, i.e., correlations between a particular construct and all other constructs. It is apparent that the results satisfy the requirement. Consequently, these results suggest adequate convergent and discriminant validity of the measurement.

Figure 3 depicts the estimated coefficients and their significance in the research model, and the graphical representation includes standardized path coefficients, t values, and variance explained for each equation in the hypothesized model. As all of the R^2 values were greater than recommended value of 0.1 (Trust = 0.31, EBR = 0.48, EBB = 0.29, and EBS = 0.42; Falk and Miller 1992), it was appropriate and informative to examine the significance of the paths associated with predicted variables. Consistent with our expectations, trust has a significant positive effect on e-business readiness ($\beta = 0.41$, $P < 0.001$), e-business benefits ($\beta = 0.19$, $P < 0.05$) and e-business satisfaction ($\beta = 0.19$, $P < 0.05$). The results also indicate that e-business readiness and e-business benefits both have positive effects on e-business satisfaction, showing their respective path coefficients of 0.35 ($P < 0.001$) and 0.23 ($P < 0.01$), meanwhile, demonstrating that e-business readiness has a positive effect on e-business benefits ($\beta = 0.40$, $P < 0.001$). The proposed model explains 48 % of the variance in e-business readiness, 29 % of the variance in e-business benefits. Altogether, constructs were able to explain 42 % of the variance for e-business satisfaction, which is considered satisfactory when using modeling approach such as PLS (Westerlund and Rajala 2010). However, Colton and Bower (2002) argued that there is no absolute standard that depicts a good/acceptable R^2 value. It could be small, yet one or more of the regression coefficient P values can be statistically significant. Such a relationship between predictors and the response may be very important, even though it may not explain a large amount of variation in the response.

Participation demonstrated significant influence on both, e-business readiness (0.37) and trust (0.55). Moreover, it had meaningful indirect impact on e-business readiness (0.23), e-business benefits (0.34) and e-business satisfaction (0.39). It should be noted that having the largest direct impact on trust (0.55) and total impact on e-business readiness (0.60), participation was proved to be a salient precursor of e-business satisfaction. Additionally, trust was found to have a very significant impact on value creation of e-business, which has the largest direct effect on

Table 3 Direct and total effects of dominants on intention to use

	Direct effects				Indirect effects				Total effects			
	T	EBR	EBB	EBS	T	EBR	EBB	EBS	T	EBR	EBB	EBS
P	0.55	0.37				0.23	0.34	0.39	0.55	0.60	0.34	0.39
T		0.41	0.19	0.19			0.16	0.22		0.41	0.35	0.41
EBR			0.40	0.35							0.40	0.35
EBB				0.23								0.23

e-business readiness (0.41), e-business benefits (0.19), and e-business satisfaction (0.19). In addition to direct and total effects, it is noteworthy that trust has significant indirect effects on e-business benefits and e-business satisfaction. E-business readiness is another powerful excitation factor affecting e-business value, demonstrating the largest direct effects and second largest total effects on e-business benefits and e-business readiness. Our results also show that e-business readiness is a crucial antecedent of e-business satisfaction, showing the largest direct effect on e-business satisfaction. Compared with e-business benefits, e-business satisfaction was largely affected by e-business readiness, since it has the biggest direct effect. Interestingly, in addition to the role trust plays in affecting e-business value, participation was found to be an important reinforcer of e-business value, particularly because it has direct impacts on trust and e-business readiness (Table 3).

5 Discussion

5.1 Findings

User participation had the most significant direct impact on trust. It also had significant influence on e-business readiness. But having highest total impact, participation was proved to be the most significant contributors to e-business value from employee perspective. Prior scholarly literature is also synchronous with this result (Mak et al. 1997; Spears and Barki 2010). Since participation was more significant than trust, it seems that the cognitive effect, e.g., corporate communication, knowledge transfer, and contextual details of using e-business systems could be particularly important to employees. Literature also evidenced that participation is likely to be more effective where employees: desire involvement, have relevant skills and information, perceive that their involvement will affect their outcomes, feel that their participation is legitimate, and possess differential expertise (Doll and Torzkadeh 1989; Mak et al. 1997; Spears and Barki 2010). On other hand, despite showing the smallest direct effects on e-business satisfaction, trust has the largest indirect and total effects on e-business satisfaction. Also, this study found that trust has a significant impact on e-business readiness and e-business benefits. The survey results also show that the more the employees rely on the e-business, the more they experience e-business readiness and benefits. This is consistent with previous

Table 4 Effects of demographics on participation, trust, and e-business value

Demographics	P	T	EBR	EBB	EBS	EBV
Gender						
Female	3.869	3.858	3.757	4.225	3.746	11.830
Male	3.873	3.992	3.931	4.287	3.848	11.964
Computer use						
≤10 years	3.937	3.872	3.865	4.311	3.817	11.993
>10 years	3.761	3.816	3.845	4.175	3.783	11.803
Education						
≤Bachelor	3.801	3.760	3.801	4.172	3.768	11.741
Master	4.030	4.057	3.981	4.460	3.886	12.327

research by (Ratnasingam et al. 2002), which shows that technology trust has a significant effect on perceived benefit.

Furthermore, the results also show that trust, e-business readiness, and e-business benefits all have a significant impact on e-business satisfaction. This suggests several effects. First, employees with higher level of technology readiness are more willing to engage in e-business to complete their job tasks and thereby improve efficiency and performance. This will help to increase employee satisfaction with e-business. Second, employees who trust and recognize e-business will support changes, look forward to better services, and simultaneously improve their perceived e-business satisfaction. Third, employees with a higher level of e-business readiness will have greater capability for and confidence in e-business, and gain more actual benefits such as work efficiency, prolificacy, and controlling force from the e-business, in turn feeling greater satisfaction with the e-business. Based on the findings of this study, both managers and researchers can understand how participation and trust impacts the value creation of e-business through increasing e-business readiness, e-business benefits, and e-business satisfaction, as well as gain a better understanding of the relationships among these factors.

Finally, we analyzed the effects of demographics on participation, trust, and e-business value. It can be observed that (1) males had slightly higher mean scores than that of female employees in all dimensions since perhaps males are to be more pragmatic about tasks; (2) employees with a higher level of computer experience had comparatively lower mean scores in all dimensions. They might have higher expectations on e-business or more skeptical about e-business; and (3) employees having higher education had slightly higher mean scores in all dimensions (Table 4).

5.2 Implications for research and management

To maximize e-business value and lead to a successful implementation of e-business, managers cannot ignore employee beliefs about trust since it will affect e-business readiness and e-business benefits, finally leading to e-business satisfaction, a surrogate variable representing e-business effectiveness/success. E-business

both benefits employees in performing their job tasks, and creates obstacles for them when interacting with these technologies, especially when they are new. Without technology readiness, e-business value cannot be fully realized and employees will not feel satisfaction with the e-business. Hence, managers can increase employee technology readiness for new technologies by means of training courses, informal forums within interested groups, or encourage self-learning by individuals and mutual learning among groups of employees. Training courses should include the manuals and should be held periodically. The human resource department should consider designing different training content depending on skill levels. The more technology readiness employees have, the more e-business benefits they gain and the more satisfaction they perceive. However, it is important to note that nature of overall e-business values is likely to be influenced by the gender. According to prior gender-related literature in IT context, task accomplishments was found to be salient for men, on other hand, degree of ease associated with the use of the system, i.e., effort expectancy, was more salient for females, nonetheless yet open to change over time (Venkatesh et al. 2003). In order to maximize e-business effectiveness/success, gender-based disposition should be adopted by management.

Participation was proved to be a significant contributor. It implies that managers of the firms are required to motivate employees from emotional and cognitive perspective since it will influence overall e-business value. Hence, firms should have a systematic mechanism that can motivate employees (Doll and Torkzadeh 1989; Mak et al. 1997; Spears and Barki 2010). Managers should examine whether employee participation is salient or not role of. Accordingly, managers can make systematic efforts to motivate employees for incurring participation. Degree of motivation could depend on frequency of involvement into e-business and its particularities. Also, from managerial standpoints, e-businesses should be viewed as an on-going process of organizational change. Hence, they are not only recommended to develop dedicated employee motivating and cognitive mechanisms, but also suggested to make assessment of employee participation in terms of affective, e.g., satisfaction, value attainment, and cognitive outcomes, e.g., corporate communication, knowledge transfer. Of course, IT efficacy of the employees must be considered as it could serves as prerequisite while involving into e-business. Training employee for their participation could be specific to e-business processes, and hence is likely to be vital for employees, encouraging greater commitment while aligning organization to satisfy business goals. Finally, managers should attempt to provide environment that will allow gaining user commitment, avoiding resistance and ensuring that participants' requirements are met such that they will contribute more value to e-business satisfaction by influencing trust and e-business readiness.

Both participation and trust were indeed found to be critical factors influencing e-business value in this study. Without trust, employees may experience misunderstandings and feel reluctant, anxious, and insecure toward e-business. This will erode e-business value and lead to employee dissatisfaction with the e-business. We propose several suggestions for increasing employee trust. First, managers can create an "unlimited communication atmosphere" for employees to discuss any issues about e-business, since conjectures and speculations will hurt trust between

employees and firms. In the free-communication environment, managers can listen to “real” concerns, and then make the “right” responses to them. Second, policy announcements can enable employees to understand what is going on and make them believe “we can succeed”. Managers at all levels must explain the firm’s policy and directions and display confidence and determination to their employees. Third, firms must guarantee that employee job status will be unchanged after implementation of e-business. This will reduce their anxiety and resistance to e-business. Fourth, group incentives are better than individual incentives in avoiding competition between employees. This can encourage collaboration and information sharing among employees, leading to their mutual trust.

Trust alone, however, is not enough for full realization of e-business value, additional attention must be paid to e-business readiness and e-business benefits, since they have the largest and second largest direct effects on e-business satisfaction. Managers should thus raise employee readiness for e-business, particularly in the initial stages of e-business implementation. Lai and Ong (2010) indicate that employee readiness for e-business has three facets: employee–technology, employee–task, and employee–structure. In addition to employee–technology readiness, managers should cultivate employee readiness to embrace new tasks and structure since implementation of e-business sometimes involves business process reengineering that creates new ways to accomplish tasks and a flatter organizational hierarchy. This entails employees having to familiarize themselves with new tasks and adjust themselves to new organizational structures. If managers can advance the e-business readiness of employees across technology, task, and structure before implementation of e-business, e-business satisfaction can be enhanced and e-business value potentially realized. Finally, managers can enhance e-business satisfaction through increasing the e-business benefits perceived by employees. This can be done at two levels, the firm and the individual. At the firm level, top management can periodically review the realized benefits and deliver messages to employees about how many benefits are created by e-business, such as reports about increased revenue, sales, or customer satisfaction. Literature relevant to information system also recognizes top management support as one of the factors affecting information system satisfaction (Legrís et al. 2003). Ho and Ho (2006) found that top management support has significant impact on the adoption of E-government systems by government employees. Moreover, social influence, i.e., degree to which an employee perceives that senior management believe that he/she should use new system, of top management is regarded as direct determinant of behavioral intention to use and hence could enhance both trust and perceived e-business values. At the individual level, managers can help employees understand that their productivity and efficiency have been improved due to e-business. The greater the benefits employees gain, the greater satisfaction employees will perceive, and the more successful the e-business will be.

5.3 Limitations and future research

This research rigorously carried out the development and testing of hypotheses, the design of the research model, and the surveying of targeted businesses. However,

several limitations should be noted. First, although practitioners always view e-business as a good solution for firms to increase competitive advantage, there is no “absolute” definition of e-business. It may be that the surveyed firms are unrepresentative of e-business. Therefore, caution is recommended when generalizing from the findings of this research. Second, employee perceived readiness in this research refers to the employee cognitive status at a specific time interval. This will change across time. Furthermore, all the results represent empirical snapshots taken by the current research at one specific time in one specific context, that of IT-related firms. Future research should adopt a longitudinal approach and be undertaken across different sectors/contexts to increase the explanatory power and external validity of these findings. Third, culture is an important factor in the construction of trust. Future research should consider the moderating role culture plays in affecting the value creation of e-business. Fourth, we find that the correlation coefficient between e-business readiness and trust is relatively high, showing the largest correlations among constructs. This implies that the relationship between trust and e-business readiness is worth more detailed investigation. Fifth, future research can extend the construct of e-business readiness using a multi-dimensional approach, perhaps comprising dimensions such as employee–technology, employee–task, and employee–structure readiness. This study only uses six aspects of employee evaluation of e-business readiness, particularly focusing on employee–technology readiness. To measure e-business readiness more precisely, future research should add more items, particularly those measuring task and structure readiness. Sixth, perceived e-business values, corresponding trust, and hence ultimate e-business effectiveness/success appear to be influenced by gender therefore further research requires in depth investigation into the impact of gender on trust and e-business values. Seventh, the relatively low R-squared values may have in part resulted from limited influence of the constructs used in research framework (Hu et al. 1999). For instance, the present study can extensively explore notion of trust, perhaps due to its intangible/multidimensional nature (Liu et al. 2005). Additionally, most respondents were engineers and who work as low-to-middle level managers therefore they were expected to have similar functional and educational attributes. Nevertheless, perfect homogeneity of the surrogate respondents was impracticable. In general, in questionnaire survey type of research, there could be a possibility of having a data bias due to sampling procedure, morality or discrepancies issues of respondents. Such situations might lead respondents to not only vary in their accuracy but also develop cognitive bias. To avoid these issues, future study should collect data using probability sampling approach. Finally, sometimes organizations can mandate a particular adopted technology to employees under pressure of regulators, competitors and partners. Although, an employee can explore, adopt and use a particular technology mandatorily or voluntarily, it’s following feature extensions and further use could be purely voluntary (Jasperson et al. 2005) that could be studied further. Hence, future research perhaps can consider to include post-adoption beliefs, e.g., such as intention to re-use, or behavior, e.g., re-usage behavior, associated with e-business values.

6 Conclusions

E-business can be viewed as an innovative invention in the current highly competitive business environment. To maximizing e-business value, managers and practitioners cannot ignore psychosocial factors such as trust and readiness to focus on technological feasibility, since human factors significantly impact e-business value through e-business readiness, e-business benefits, and e-business satisfaction. Trust relations between employees and e-businesses are sensitive, particularly when future status is uncertain and unstable. Building an atmosphere of trust can ease fears and threats regarding job change, encourage information/knowledge sharing and collaboration, increase e-business satisfaction through e-business readiness and e-business benefits, and finally lead to e-business success. Further, readiness for e-business was found to be an important antecedent of e-business success. In sum, this study successfully sheds light on how trust affects the value creation of e-business in terms of e-business readiness, e-business benefits, and e-business satisfaction. Our findings can help practitioners and researchers better understand why employees trust and how they become ready for e-business, predict how employees will respond to e-business, and increase employee satisfaction with e-business by improving the techniques and processes by which it is implemented. They will also be valuable to researchers in developing and evaluating e-business theories.

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Appendix

Participation (P)

- | | |
|----|---|
| P1 | I understand clearly the purpose of e-business |
| P2 | I understand clearly the functions of e-business |
| P3 | I am glad to cooperate with activities regarding e-business |

Trust (T)

- | | |
|----|--|
| T1 | I believe that our company can conduct e-business successfully |
| T2 | I think that e-business is supported by the supervisors in our company |
| T3 | Our company can provide better services after conducting e-business |
| T4 | E-business is honest |

E-business readiness (EBR)

- | | |
|------|--|
| EBR1 | I would like to use e-business to complete tasks in my job |
| EBR2 | The e-business can make me more effective in my job |
| EBR3 | I have learned more about e-business than other employees |
| EBR4 | I can learn new e-business without any help |
| EBR5 | I am ready to have the ability to use e-business |
| EBR6 | I have the confidence to use e-business |
-

Appendix continued

E-business benefits (EBB)

EBB1	E-business can increase my productivity in my job
EBB2	E-business can increase my performance in my job
EBB3	E-business is helpful to my job
EBB4	E-business can increase my ability to control events in my job

E-business satisfaction (EBS)

EBS1	On the whole, I am satisfied with the e-business
EBS2	On the whole, the e-business is successful

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