ASSESSING SAUDI ARABIAN BUSINESS IT CAPABILITIES FOR ONLINE SELLING ADOPTION

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Abstract- This study investigates the impact of online selling opportunities in Saudi Arabia using Net-Enabled Business Innovation Cycle (NEBIC). The research model has three factors:1) selecting enabling technologies (SET); 2) comparing proposed technologies with economic opportunities (CEO); and 3) implementing information technology as business innovation for growth (IITBIG). The model explores power of the net-enablement variables (SET, CEO, and IITBIG) that accommodates both online sellers and offline sellers in Saudi Arabia to test whether online sellers are associated with better developed net-enablement variables compared to offline sellers in Saudi Arabia. A survey questionnaire has been designed to collect data from the firms operating in Saudi Arabia and selling their product / services online using Internet. A sample size of 500, by using convenience method, selected but received 338 responses. The correlation and regression analysis performed to test the model and descriptive statistical analysis also carried out. The study reveals that there is high correlation exists among the components of all the three constructs and the correlation between SET & CEO and CEO & IITBIG also found positive and the hypothesis accepted.

Keywords- Net-Enablement, On-line selling, on-line buying, dynamic capabilities, Growth

I. INTRODUCTION AND BACKGROUND

UAE leads in GCC for adopting E-Commerce in the region (Sacha, 2012) and Saudi Arabia is the next leading market in the future. Yet the acceptance of new and emerging technology based applications in the Middle Eastern countries has not been challenged even in some cases has been considered as business risk (Baadbdullah, 2013). The main causes for this has been identified as strong cultural influence and religious boundaries (Aldraehim et al., 2013). Al-Ghaith et al. (2012) examined that organizations of all types demand acute acceptance validation before coming into the e-commerce based business. Because of these issues, number of studies have already been carried out to observe adoption of a number of emerging ICT (in the Saudi Arabian context), such as Internet (Adaileh, 2012; Alrashid, 2012; Mathrani and Alipour, 2010), broadband (Gulati and Yates, 2012), electronic commerce (AlGhamdi et al., 2013; Alotaibi, 2013; Ahmad and Agrawal, 2012) and electronic government (Alsowoyegh, 2012; Baakeel, 2012; Basri, 2012).

This research paper explores to the body of literature that argues that the adoption of any new technology necessitates undergoing innovations in the business models in order to utilize the opportunities of that new technology fully (e.g., Ciborra, 2009; Ye et al., 2014). Furthermore, this research investigates specific internal organizational capabilities that help firms adopt online selling tools (e.g., Rask and Kragh, 2004; Bilgihan and Bujisic, 2014; Nicholson et al., 2016). The authors come across a series of peculiar examples of products and services that are not normally sold online in Saudi Arabia (e.g., animal semen, dried products and seeds, minerals, and chemicals, wood in natural or processed forms, concrete and drilling products/services, water softener salt and other salt-based products, and professional consulting services). These examples motivate the authors to perform further research of challenging sectors for the e-business adoption in Saudi Arabia.

There has been a continuous dialogue involving Wheeler's (2002) theory. For more than a decade, numerous scholars have continued to cite the NEBIC model in their research (e.g., Lyytinen and Rose (2003), Hackbarth and Kettinger (2004), Burn and Ash (2005), Nielsen (2006), Joo (2007), Butler and Murphy (2008),Harris et al. (2009), Patrakosol and Lee (2009), Yoo et al. (2010), Jacks et al. (2011), Chiang et al. (2012), Chakravarty et al. (2013), Ainin et al., 2015, and Tallon et al., 2016). The authors of this study join the dialogue by analyzing Saudi online sellers and offline sellers in sectors with below-average rates of online selling adoption.

The research model has three variables:1) selecting enabling technologies (SET); 2) comparing proposed technologies with economic opportunities (CEO); and 3) implementing information technology as business innovation for growth (IITBIG). To show the prediction power of the model, the net-enablement variables (SET, CEO, and IITBIG) accommodate both online sellers and offline sellers in Saudi Arabia to test whether online sellers are associated with better developed net-enablement variables compared to offline sellers in Saudi Arabia. The proposed model argues that online sellers strongly believe to have better developed net-enablement design than will offline sellers. The active capacity perspective posits that firms must continually craft, adapt, and reconfigure internal and external resources to be associated with the ever-changing business environment and to attain competitive benefit (Sach 2015).

Wigand (1997) describes, a network consists of social systems, organizations, individuals, groups, the whole industries, and political and social communities. Schon (1973), Dosi et al. (1988), and McNaughton and Bell (2001) identifies that networks aid participants share knowledge, experiences, and ideas. Similarly, the above authors term net-enablement as the innovative use of networks to connect suppliers, customers, and partners. According to Wheeler (2002), net-enablement capabilities can decrease the burdens concerning time and distance, swap information processes with physical processes, and enable innovation that helps firms in their competitive environments.

II. THE MODEL

The implementation of new perceived idea terms as innovation, whether radical or incremental (Schilling, 2008) in its environment, even if the idea presents elsewhere (Van De Ven, 1986; Schilling, 2008; Tether, 2002). This definition is also relevant to technical innovations, such as new products, services, and technologies (Schon, 1967; Schilling, 2008), managerial innovations, such as new procedures, polices, and organizational structures (Schon, 1967; Van De Ven, 1986).

Normally, most of the organizations in the same sector have a propensity to use alike business models, and these models tend to produce similar outcomes; however, firms also like to change their business models when follow information technology modernization. An organization's business model performs a major role in meeting the new business requirements of the newly invested technology by delivering value to the customer through commercialization of the firm's products or services via the new technology (Chesbrough and Rosenbloom, 2002; Hamermesh et al., 2002; Laugesen and Yuan, 2010, Ainin et al., 2015).

The current research model refers to the adoption of online selling as new technology implemented by firms. The model targeted in this research is the changes a Saudi firm makes in its way of doing business to accommodate and utilize the online selling adoption that resulted from a well-developed net-enablement capability (i.e., represented by the IITBIG variable). These targeted innovations can occur in many aspects of the firm, such as the firm's products, services, sales channels, and supply chain, and they can take many innovative forms, including technological, procedural, and managerial.

Adapting Wheeler's (2002) NEBIC model, this study aims to explore if Saudi firms that adopt technology innovation strategies are likely to present stronger established net-enablement capabilities based on the NEBIC model and whether non-adopters are likely to have less developed net-enablement capabilities. Wheeler's (2002) model hypothesizes that there is a positive relationship between successfully implementing technology innovation to retain expansion, on one side, and improved net-enablement capability, on the other (Figure 1). The study depends on dynamic capability theory in estimating a firm's ability to organize resources in dynamic business environments and a firm's ability to retain growth by identifying and implementing new technologies.

III. HYPOTHESIS

The study examines the following hypothesis:

H1: There is positive correlation exists among the components of net-enablement and technology adoption (online selling).
H2: There is a positive correlation exists between SET and CEO constructs of the model.
H3: There is positive correlation exists between CEO and IITBIG constructs of the model.

IV. LITERATURE REVIEW

Wigand (1997) describes, a network consists of social systems, organizations, individuals, groups, the whole industries, and political and social communities. Schon (1973), Dosi et al. (1988), and McNaughton and Bell (2001) identifies that networks aid participants share knowledge, experiences, and ideas. Similarly, the above authors term net-enablement as the innovative use of networks to connect suppliers, customers, and partners. According to Wheeler (2002), net-enablement capabilities can decrease the burdens concerning time and distance, swap information processes with physical processes, and enable innovation that helps firms in their competitive environments.

Some attempts have been employed for analyzing and synthesizing current knowledge that encompasses adoption and diffusion (Baabdullah, 2013; Kapoor et al., 2012; Williams et al., 2009), RFID (Irani et al., 2010), institutional theory in IS research, knowledge management, business/IT alignment (Miller et al., 2013; 2012), electronic government (Rana et al., 2013; 2012; 2011), mobile payment (Slade et al., 2013) and mobile ticketing (Kapoor et al. 2013). Similar efforts have also been conducted to synthesize current research in the Middle Eastern context; for example, research on adoption of knowledge management systems in the Saudi Arabian context have been reviewed (Alatawi et al., 2013a) and further conceptualized (Alatawi et al., 2013b).

The NEBIC model emphasizes that net-enablement brings customer value and develops a feedback loop that assists future technology choices. Wheeler (2002) values significantly that successfully establishing

technology innovation to maintain business expansion is correlated with improved net-enablement capabilities. Companies use their net-enablement capabilities to improve the processes of identifying, selecting, and implementing new information technologies and thus create customer value by maintaining business expansion and competitiveness.

The NEBIC model is a recurring model that consists of four capabilities within two levels of value recognition—the value potential level and the value realization level. These capabilities involve (1) selecting emerging/enabling technologies (ET), (2) suitable proposed technologies with economic opportunities (EO), (3) implementing business innovation for expansion (BI), and (4) evaluating customer value (CV). The ET, EO, and BI capabilities compositely results the value potential level, and the CV capability by itself forms the value realization level. This research paper addresses the first three capabilities discussing internal organizational capabilities and adopting company (rather than customer) data and tests them against business model innovation for online selling as a dependent variable and an outcome of the research model.

V. METHODOLOGY

This study focuses over Saudi business firms selling / buying online and hence a comprehensive questionnaire has been designed to collect data. A likert scale of 7 (1-Extremely poorly, 2-Poor, 3-Somewhat poor, 4-Uncertain, 5-Somewhat high, 6-High and 7-Extremely high) used to assess the level of development in the responding firms in the questionnaire. There were 500 firms targeted and 338 responded to the questionnaire which is 68% of the total responses. The questionnaire designed and sent electronically to the respective firms. A descriptive statistical method chosen to describe the attributes of the respondents and regression and correlation analysis used to explain the results. Cronbach's Alpha applied to the test the validity of the data collected.

VI. DATA ANALYSIS

Reliability Test

In order to test the internal co-linearity and internal consistency among the variables used in the study, a reliability test Cronbach's Alpha employed. Table 1 presents the Cronbach's Alpha values in all the cases tested that are higher than 0.89. Hence the study submits that the scale explains the NEBIC theoretical model and there is consistency found among the four described constructs of the model. Overall Cronbach's Alpha value for SET, CEO and IITBIG found 0.969, 0.951 and 0.967 respectively. Within each construct the values are 0.904, 0.921, 0.891 and 0.925 in SET construct for Identifying, Assessing, Filtering and RC respectively. Similarly, 0.93 and 0.911 in CEO construct for SEO and CDS respectively. And finally 0.983, 0.941, 0.926 in IITBIG construct for PM, EE and CSC component respectively.

Demographic Analysis of the responding firms

Table 2 identifies the detailed demographic description of the responding firms.

The study includes 338 questionnaires' data received from 10 different countries representing 26 various cities. The main focus has been in the Saudi Arabia. 82% of the data represents the respondents from the Saudi Arabia in various cities the remaining 18% from Canada, China, Europe, Ireland, Kuwait, Romania, UAE, UK and USA. Upon asking in the questionnaire, the foundation year of the companies, it has been found that 12% founded before 1950, 7% between 1950 and 1969, 23% between 1970 and 1989, 36% between 1990 and 2009 and 17% founded during 2010 and 2014, whereas 5% did not reply to this question. The study conducted in the various types of primary industries. The results show that 6% from Banking and Financial Sector, 15% from petrochemical, 1% from Cement, 2% from retail, 15% from energy sector, 11% from telecommunication, 1% from insurance, 4% from multi-investment, 4% from industrial investment, 8% building construction, 1% real estate, 3%, 2%, 3% from transport, media and hotel respectively. However, 22% from other business sectors were also included in the study.

The study also acquired the position of the respondents and found that there are 7% CEO, 10% owners, 3% company's president and 29% are General Managers / Department heads. A large number of the respondents belong to Employee position i.e. 48% only 3% did not mentioned their position. The study also reveals the size of the company in terms of Number of Employees and found that the majority of the respondents of this study are from high-numbered employees' firms i.e. 57% which belong to 500 or more employees in the firms. Others are 14% belong to under 10 employees, 4% are from under 20 employees, 4% are from under 50 employees, 7% under 100 employees, 7% under 300 employees and 6% under 500 employees group. There were just 2% respondents who did not reply to this question.

In order to collect data for using E-Facility for sales and purchase, the study shows that 47% use ERP, 45% use SAP, 42% use Oracle, 16% use Virtual team concept, 43% use Project management systems, just 19% use Electronic Data Interchange (EDI), 82% use Internet, 54% use Intranet, 56% use LAN (local area network), 51% use Wireless network, 68% use e-mail exchange server and 70% use e-mail Service Internet.

To understand the use E-facility, how many IT workforces these firms use, the study found that most of the firms have higher number of IT professionals working in their firms i.e. 49% respondents have 15 or more IT Employees in their organizations. 3% did not reply to this question, 29% of the respondents have between 1 and 5 IT employees, 10% have between 6 and 10 and 9% have between 11 and 15 IT employees working. In response to Saudi employee working in these organizations, the result shows that 38% employees are Saudi between 1 and 5 numbers of employees, 11% between 6 and 10, 6% between 11 and 15 employee group and 37% are Saudi employees if the number of employees are more than 15. However, 8% did not reply to this question.

The target market for the respondents firms are Individuals (35%), Other Business (45%) and Government agencies (17%), whereas 3% did not reply. In response to if the website has been hacked, the 78% of the respondents replied positively and 3% did not reply. There are 55% of the respondents' firm who make online purchases but 2% did not reply to this question. On the other hand, 72% of respondents firms sell online and just 1% did not reply. In this regard, the firms have been selling online for many years. The result shows that there are 3% of the respondent firms who have been selling online before 1995. 2% of the firms are selling online between 1995 and 1999, 3% firms are selling online between 2000 and 2004, 5% between 2005 and 2009, and 13% between 2010 and 2014. A large number of the firms did not reply to this question i.e. 74%. The next question is about the percentage of online sales and results are not much different than the previous question. 75% of the firms did not reply to this question. There are just 2% of the firms which sales online less than 1% of their sales, 4% which have between 1% and 4% of online sales, 7% sales online between 5% and 9% and 13% of the firm sell online lies 10% or more of the sales.

What are different methods have been adopted by the respondents firms for Online Order, the study found that 14% with their own websites, 7% from others' websites, 16% via e-mail, 9% through the Agent, 3% through the Auction, 4% via industry's portal and 8% using EDI technology. While making sales or purchase online, just 20% of the respondents firms use online option 13% use Cash as payment of receipt option.

Correlation Analysis and Testing of Hypothesis

SET Construct

Table 3 reveals the correlation among the variables of SET Construct and it reveals that there is positive and significant correlation exists among all the variables but at p-value 0.01. There is positive and significant correlation exists between FI and ID variables of SET Construct which is about 76%, similarly the correlation between Filtering and Assessing (0.810) is very significant and positive, and correlation between Filtering and RC is also very significant and positive (0.823). The correlation between Identifying and Assessing also found positive and significant i.e. 0.844 and the correlation between Identifying and RC is also positive and significant i.e. 0.724. Finally the correlation between RE and AS also found positively and highly significant (0.779).

CEO Construct

Both the variables in CEO Construct have positive and high correlation between them i.e. 0.815. It means 81.5% of variables CO have positive and high impact over SE. Table 4 shows the results of the correlation between these variables at p-value of 0.01.

IITBIG Construct

Like other two constructs' variables, the results in Table 5 show that there is positive and high correlation exists among the variables of IITBIG. There is significant and positive correlation found between PR and CR (0.722) and PR and EM (0.778). Similarly, there is high and positive correlation exists between CR and EM (0.743). It means about 80% of these variables explain each other.

Overall correlation among the constructs of the model

Overall correlation among the constructs SET, CEO and IITBIG found positive and very high. This means all the constructs support each other in achieving the ultimate output of the model. Table 6 displays the correlation among the components of Net-Enablement for Technology Adoption (Online Selling) and it reveals that there is high and positive correlation exists between SET and CEO (r = 0.88). It also presents that there is high and positive correlation exists between CEO and IITBIG (r = 0.81). Thus it accepts the hypothesis H1.

Correlation between SET and CEO construct

Overall there is very significant and positive correlation exists between SET and CEO construct at p-value 0.01 (0.890). It reveals that around 90% of both the constructs explains each other's variables in the model. Table 7 shows the computation values for these variables.Since there is positive correlation exists between SET and CEO construct, therefore, the hypothesis H2 is accepted.

Correlation between CEO and IITBIG constructs

The results in Table 8 show that there is positive and very significant correlation exists between the constructs CEO and IITBIG (0.845). That means about 85% of the variables of these constructs explains each other. There is positive correlation exists between CEO and IITBIG, the hypothesis H3 is accepted.

CONCLUSION

The study conducted for the Saudi Business Firms, operating online business, to test the Net-enablement

capability for the technology adoption. The study reveals that there are large number of firms (72%) adopted the NEBIC model. The Net-enablement is positively and highly correlated with the technology adopting firms which concludes that more net-enablement would lead to higher number of technology adopting firms. The investigation also presents that there is higher and positive correlation exists even among the components of the model's constructs for Net-enablement in Saudi business firms. The future direction may continue in multi-group analysis for these firms that adopted technology under NEBIC model.

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