

EXPLORING THE MODERATING EFFECT OF STRATEGIC ORIENTATION OF SENIOR MANAGER ON ICT ADOPTION: EVIDENCE FROM INDIAN MSMEs

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***Abstract:** The aim of the study is to examine the moderating effect of the strategic orientation of senior managers on ICT adoption in Indian MSMEs. The findings suggest that motivation, commitment and management skill of senior managers is a critical factor to employ ICT in business operations. Our findings suggest that ICT and e-business technologies are economically driven to raise business opportunities, generating profits and creating sustainable business model. It is the behavioural intentions of decision maker of MSMEs either senior manager or firm owner which seems to function as a moderator in the adoption process.*

***Keywords:** ICT, e-readiness, strategic orientation, MSME, India*

INTRODUCTION

Attitude and behavioural intentions of senior managers of MSMEs has emerged as a valuable intangible firm-specific resource that can guide strategic practices for a firm's value augmentation and goal actualization. With the advent of globalization business environment has become highly complex and firms have to seek for ways and means to become more productive, efficient and competitive. Identification of strategic core of the business and adoption of the proper strategy offers the prospect of turning modest opportunities of the business into success. Several empirical studies reveal that the use of Information and Communication Technology (ICT) has become almost inevitable for firms to raise its market share and better performance (Li *et al* 1999; Lee, 2001; Napier *et al* 2001). However, adoption of ICT and e-business techniques by MSMEs remains limited and unequal because not all have the desire, attitude and capacity to

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take up of ICT in their business process (Ballantine *et al.*, 1998; Joseph, 2009; Corso *et al.*, 2001). The present study, set in the unique setting of India, investigates how these MSMEs conceptualize, perceive strategic values of ICT and achieve higher level of adoption. The study also aims to explore the role of owner in this context.

LITERATURE REVIEW

The current market place is an evolving economy characterized by ever increasing emphasis on competencies. A firm's value is frequently enhanced when the strategy includes an active systematic effort to have automation in customer engagements (Temi *et al* 2007) recognize and capture new market. Technology adoption can be seen as a matrix of business activities organized to plan, produce, price, promote, distribute, and mega market goods, service, and ideas for the satisfaction of relevant customers and client (Helena *et al*, 2011). There are several studies reflecting the relationship of ICT use and business performance in large companies (Barua *et al*, 1995; Brynjolfsson *et al* 2000). However, the consensus is that ICT investment provides the avenue for utilizing the resources of a firm and creates value for the firm. It evolves from the interplay of the other variables like cycle time, cost, marketing effort and the firm's proactive attitude to incorporate the environmental dynamism into business strategy (Lee 2001). A perception of firm owner or manager is vital in realising the strategic importance if ICT use and its close link with financial performance (Amit and Zott, 2001). Strategic technology management entails a broad spectrum of strategic information and provides the strategic advantages to a business to address challenges of the ICT adoption by which it can achieve its goal and become sustainable (IGbaria *et al*, 1995; Premkumar *et al*, 1999; Mirchandani, 2001). Technology acceptance Model has been widely used to access various facets of users' acceptance of technology-based-innovations such as web based geographical information system, social networks, information-technology decisions and across a wide array of service sectors with eventual inclusion of constructs to the original model over time (Davis, 1989; Chau and Hu, 2002; Hernandez *et al.*, 2008; Peng *et al.*, 2012; Sarkani *et al.*, 2013; Zahid *et al.*, 2013; Pantano and Corvello, 2014). The key factors influencing intentions to use of technology were perceived ease-of-use, perceived usefulness and information quality (Lederer *et al* 2000). Internet adoption by the small firms was found to be influenced by perceived benefits, organizational readiness and external pressure (Chang and Cheung, 2001; Mehrtens, *et al.*, 2001). The Theory of Planned Behaviour been developed as a structural framework for prediction of human behaviour according to beliefs and attitudes based on three conceptually individualistic constructs- attitude, subjective norm and perceived behavioural control (Ajzen and Fishbein, 1980). Subjective Norm defined as the perceived social pressure in the process of making decisions to perform or not to perform certain behaviour or action or how the consumer will be impacted by the word-of-mouth or referents' perception, have been widely applied as a significant antecedent for behavioural intention (Ajzen, 1991; Karahanna

et al., 1999; Kim *et al.*, 2009; Kim *et al.*, 2013; Liao *et al.*, 2015). This construct have been applied to extend the Technology acceptance model with regard to decisions pertaining to usage of business management software and technology usage behaviour (Karahanna *et al.*, 1999; Venkatesh and Davis, 2000; Hernandez *et. al*, 2008). Subjective norms exert a positive influence on technology usage or re-usage behaviour (Kim *et al.*, 2009). In this backdrop, it is obvious that perceived value on the subjective norm scale of the SME owner may also influence intentions to use ICT.

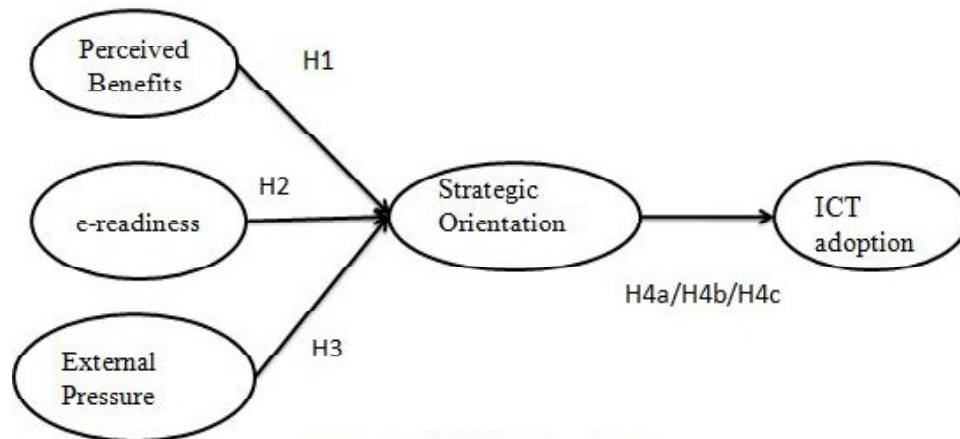


Figure 1: Research framework

This symbolizes that perceived benefits, organizational readiness would maximize the likelihood of human-computer interaction or behavioural intention to technology usage (Lim *et al.*, 2008; Castaneda *et al.*, 2009). The intention to use a specific technology in a Firm will be moderated by the strategic orientation based on perceived benefit mediated by reduction in firm owners' sincere effort.

PERCEIVED BENEFIT

Perceived benefit seems to be a decisive element in driving firm wide effort of ICT management initiative as reflected through transaction cost reduction, cash flow improvement, better trading partner relationship, inventory level reduction, operational efficiency and performance improvement. SMEs can enhance their competitive advantage when they adopt ICT in their business strategy. However adoption exercise is largely influenced by the positive perception of perceived benefit of new technology by the firm owner or senior manager. Therefore it is hypothesized that

H1: Perceived benefit is positively related with effective ICT adoption in SMEs

FIRM'S E-READINESS

Firm's e-readiness has important connotations in ICT adoption in MSMEs due to lack of sufficient financial and technological resources in which these business units operate. ICT adoption is very much dependent on technology compatibility and sufficient finance to invest. To achieve higher adoption firms should have a thorough and continuous understanding of the perceived benefits of information and communication technology. It is therefore, imperative for organizations to establish an important framework of legitimacy for new directions and transformations and accommodate the constant process of technology management. Firms would be able to enhance their market position, profitability and overall external performance and competitive edge through strategic marketing management. Effective ICT adoption depends on attitude and continuous support of top managers practices may be a source of competitive advantage. Therefore, the study proposes that

H2: Firm's e-readiness is positively related with effective ICT adoption in SMEs

EXTERNAL PRESSURE

According to the traditional institution theory firms have to operate in a competitive business environment. Influence from external environment is considered either as external pressure or imposition pressure originated from trading partners. Firms are pressurised to make the adoption decision as their competitors are observed to incorporate the new technology in their business process and to gain their market position. External pressure is a key determinant of ICT adoption.

H3: External Pressure is positively related with effective ICT adoption in SMEs

STRATEGIC ORIENTATION OF SENIOR MANAGER

ICT adoption and diffusion is very much dependent on perceived benefit of the new technology, firm's e-readiness and external pressure. However, all these determinants are very much associated with strategic orientation of senior manager to move forward its technology. Firms are likely to achieve higher technology compatibility when the new technology adoption is linked with business strategy. Active support of senior manager positively moderate the link of ICT adoption with perceived benefit, e-readiness and external pressure and create the environment for the new technology uptake. Technology initiatives of these small firms are likely to move forward when the perceived benefit override latent costs and risks in relation to new technology uptake. Strategic orientation of decision authority either senior managers or firm owners is significantly related with the new technology adoption of the MSMEs.

H4a: The relationship between perceived benefit and ICT adoption is positively moderated by Strategic orientation of senior managers of MSMEs

H4b: The relationship between firm's e-readiness and ICT adoption is positively moderated by Strategic orientation of senior managers of MSMEs

H4c: The relationship between external pressure and ICT adoption is positively moderated by Strategic orientation of senior managers of MSMEs

H4: The relationship between ICT adoption antecedents and ICT adoption is positively moderated by Strategic orientation of senior managers of MSMEs

MEASURES

For the purpose of the study three constructs were considered after a careful review of literature. The constructs are explained below. The abbreviations refer to the variables to be used in data analysis section.

Strategic orientation of senior management (SOM) addresses a critical role in driving firm wide strategic management efforts. It is expected that firms with high levels of senior management involvement witness higher level of success of ICT adoption initiative leading to higher level of business success in terms of market position, profitability and competitive edge. Strategic orientation of management stresses the degree and extent of adoptability of a firm to incorporate internal and external environmental factors in its ICT adoption exercise. This requires firms to realise the benefits as well as the costs and risks associated with the new technology uptake, evaluate its own resources and adopt new strategy. Effective and right strategy may be a source of competitive advantage which helps the business to achieve higher level of customer satisfaction and enhance their market share towards creating a competitive environment and enhancing business performance in terms of cash flow improvement, inventory reduction and operational efficiency.

Business performance outcome is conceptualized as improvement of external performance of the firm, which is measured by competitive market position and profitability and firm's value.

METHODOLOGY

A survey instrument was adopted to collect data to test the hypotheses. The study collected data using both online and offline surveys from one hundred sixty one (502) MSME located in India. Sampling procedure was random sampling. The theoretical dimensions underlying technology management were conceptualized and a questionnaire was developed to measure them. Five point Likert type scale was used to measure the question items, ranging from 1 very low to 5 very high. In order to assess the relationship between the constructs and to determine the predictive power of the model for Indian MSMEs, a structural equation modelling approach was employed. The analysis and interpretation of the SEM was conducted in a two stage process: first the reliability and validity of the measurement model were evaluated; and second, we tested the structural model.

RESULTS AND DISCUSSION

In the sample all the participants are male and they have been in the same organization for atleast five years. The mean and standard deviation for each construct was calculated (Table 1).

Confirmatory factor analysis was conducted to establish the measurement of the constructs of the model (Hair *et al* 2009). The selected model fit indices were within the recommended range as revealed, an indication of the acceptability of the measurement model (Table 2). The model fits well. The adequacy of the measurement model was evaluated based on the criteria of convergent and discriminant validity and the reliability of the constructs.

Table 1
Descriptive statistics

<i>Variables</i>		<i>Mean</i>	<i>Standard deviation</i>	<i>Skewness</i>
Strategic orientation of senior manager	(SOM)	3.65	0.53	0.24
Perceived Benefit	(PEB)	3.74	0.50	0.79
Organizational readiness	(ORR)	3.48	0.52	1.08
External pressure	(EXP)	3.08	0.46	0.87
ICT adoption	(ICT)	2.06	0.53	0.78

In order to assess construct validity we calculated composite reliability (CR). A cut off value of 0.7 is appropriate for modest construct validity for survey research (Nunnally and Bernstein, 1994; Streiner, 2003). All reliable measures were greater than 0.70 (ranging from), satisfying minimum criterion for internal consistency (Table 3). Therefore, all of the multi item constructs were reliable.

Convergent validity was assessed using average variance extracted measures (AVE). AVE calculates the mean variance extracted for the item loadings on a construct and is used as an indicator for convergence (Fornell and Larcker, 1981). AVE values obtained greater than the minimum value of 0.5 will be supportive for the convergent validity check, and it has been achieved in the present study. Moreover all standardized loadings are significant and were related to their respective constructs, further providing evidence of convergence validity (Table 3).

To assess discriminant validity, the cut off of 0.90 was used as implied distinctness in construct content (Bagozzi, 1980; Gold *et al.*, 2001). The estimated correlations between all construct pairs were significantly less than 0.90 giving evidence of the existence of discriminant validity (Table 4).

The structural model was constructed to test the hypotheses. All of the goodness-of-fit statistics are within the recommended range ($X^2/df = 1.05$, RMR=0.05, RMSEA=0.08, CAIC=380.16, PGFI=0.62, PNFI=0.62, CFI=0.98). The validity of both the measurement model and structural model has been established. Table 5 presents the

Table 2
Goodness-of-fit statistics of the measurement model

<i>Goodness-of-fit statistics</i>	<i>Measurement model</i>	<i>Recommended range</i>
χ^2/df 1.05<3.0		
Root mean-square residual (RMR)	0.05	<0.05
Root mean-square error of approximation (RMSEA)	0.07	<0.08
Akaike's information criterion (CAIC)	380.16	< Saturated model and Independent model
Parsimony goodness of fit index (PGFI)	0.62	>0.5
Parsimony normed fit index (PNFI)	0.62	>0.5
Comparative fit index (CFI)	0.98	>0.9

estimate for each path (regression coefficient) and the corresponding p-value for the regression coefficients at 0.01 level of significance. In the proposed conceptual model we predicted that perceived benefit will have a positive influence on effective implementation of ICT adoption exercise (H1), which was supported by the results ($\hat{\alpha}=0.640$, $p<0.01$). Therefore, perceived benefit had a strong direct effect on technology adoption. H2 and H3 were also supported. For the results showed organizational readiness and external pressure had a significant impact on ($\hat{\alpha}=0.720$ and $\hat{\alpha}=0.590$ and $p<0.01$). H4a, H4b and H4c were also supported supporting the view that the relationship between ICT adoption antecedents and ICT adoption is positively moderated by strategic orientation of senior managers of MSMEs. Overall, the results support that ICT adoption process is positively mediated by positive orientation of senior manager or firm owners towards integration of ICT adoption in the firm's business strategy. The results of the structural equation modelling reveal that information and communication technology adoption exercise has very significant impact in value augmentation and goal actualization of a firm and perceived benefit, organizational readiness and external pressure.

Table 3
Construct reliability

<i>Constructs</i>	<i>Factor loadings</i>	<i>CR</i>	<i>AVE</i>
Strategic orientation of senior manager		0.85	0.56
Monitors continuously changes in environment and evaluate intensity	0.76		
Acceptance of responsibility for taking initiative new technology	0.78		
Making necessary changes for ICT implementation	0.82		
Extent to which ICT adoption goals are made specific within the firm	0.76		
Importance attached by the senior manager in relation to firm's e-readiness	0.79		
Benefit and cost review of technology adoption in the meetings	0.86		
ICT adoption		0.86	0.63
Includes new technology for logistics and delivery	0.82		
Includes new technology for finance	0.75		
Includes new technology for purchasing and procurement	0.74		

contd. table 3

<i>Constructs</i>	<i>Factor loadings</i>	<i>CR</i>	<i>AVE</i>
Includes new technology for operations, processing and assembly	0.78		
Includes new technology for marketing and sales	0.84		
Includes new technology for after sales service	0.89		
Perceived benefits		0.87	0.59
Improves sales revenue	0.73		
Reduce operation cost	0.86		
Promote products more efficiently	0.71		
Establish better relationship with customers	0.69		
Establish better relationship with suppliers	0.72		
Promote after sale service more efficiently	0.79		
Firm's e-readiness		0.91	0.68
Firm has sufficient financial resource to adopt ICT initiatives	0.82		
Firm has sufficient technological resource to adopt ICT initiatives	0.78		
Firm has developed culture and value to adopt ICT initiatives	0.77		
Firm has developed internal process to adopt ICT initiatives	0.78		
Firm has developed technical system to adopt ICT initiatives	0.74		
External pressure		0.87	0.64
Competitors' pressure to adopt ICT	0.71		
Customers' pressure to adopt ICT	0.75		
Government pressure on firms to adopt ICT	0.78		
Pressure from legal environment to adopt ICT	0.75		
Suppliers' pressure to adopt ICT	0.77		

Table 4
Correlations between constructs

<i>Constructs</i>	<i>SOM</i>	<i>PEB</i>	<i>ORR</i>	<i>EXP</i>	<i>ICT</i>
SOM	1				
PEB	0.63	1			
ORR	0.74	0.51	1		
EXP	0.66	0.59	0.75	1	
ICT	0.80	0.63	0.70	0.65	1

Note: All correlations are significant at the 0.01 level

Table 5
Path Analysis and standardized regression estimates

<i>Hypothesis</i>	<i>Path coefficients</i>	<i>Supported (yes/No)</i>
H1: Perceived Benefit → ICT adoption	0.640*	Yes
H2: Firm's e-readiness → ICT adoption	0.720**	Yes
H3: External pressure → ICT adoption	0.529*	Yes
H4a: Perceived benefit & Strategic orientation of senior managers → ICT adoption	0.820**	Yes
H4b: Firm's e-readiness & Strategic orientation of senior managers → ICT adoption	0.871***	Yes
H4c: External pressure & Strategic orientation of senior managers → ICT adoption	0.666**	Yes

*p<0.001, **p<0.01 and ***p<0.05

CONCLUSION

The study contributes to reveal the moderating role of firm owners or senior managers of MSMEs on ICT adoption exercise. The findings suggest that a proper understanding and support of the senior managers or firm owners is very urgent to understand changes in environmental factors and adopt new technology in order to enhance market position and competitive strength in MSME sector.

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