

INFORMATION SYSTEMS IN SMALL AND MEDIUM ENTERPRISES (SMES) IN INDIA

Susan Sharma and Sudhir K. Jain

Fellow of the Indian Council of Social Science Research (ICSSR). She can be contacted at C-2490, Sushantlok I, Gurgaon 122002. Tel.9124-5045330/09810027546 Email: susan_sharma@hotmail.com

Associate Professor at I.I.T, Delhi. He can be contacted at Department of Management Studies, I.I.T, Delhi, Hauz Khas, New Delhi-110016

Abstract: An empirical study of knowledge entrepreneurs in India done through an online questionnaire survey brings out some interesting facts. Use of IT/IS is more prevalent in the trade and IT services sector compared to traditional manufacturing and services sector. Those who rated IT training as a major motivator to become an entrepreneur, rate better possibility of their business depending on high speed internet. Entrepreneurs who rate innovation of product/services high also rate dependence on high speed internet high, also rate their expertise in IT high. Those who rate high on entrepreneurial index also rate high on expertise in IT rate high their use of IS.

Key words: Information Systems, Small Medium Enterprises, Knowledge Entrepreneur

Introduction

Use of computer based information systems (IS) in the business world and corporate world in India, has been growing at a momentum higher than that of other industries in the country. During 2002-03, the Information Technology (IT) -enabled services segment grew by 65 percent and revenues from this sector rose from around Rs. 71 billion in 2001-02 to approximately Rs. 117 billion in 2002-03. Has the use of IS and the resulting empowerment of the individual also resulted in a new brand of entrepreneurs who are essentially knowledge workers? Will there be a mushrooming of IT-oriented small businesses in the near future? These are some of the questions we address in our study.

The Small & Medium Enterprises (SME) sector is one of the fastest growing industrial sectors all over the world. However, the Global Entrepreneurship Monitoring Index (April 2003) rated India just above South Africa with an index of 0.04 in the high potential entrepreneurship area. Innovation and technology transfer leverage SME competitiveness in the global knowledge based society. India currently spends less than 2 percent of its GDP on IT, which is very low when compared to the US which spends 5 percent of its GDP on IT or France, which spends 2.7 percent of its GDP on IT. IT is more of an enabler in India than the cause for innovation. Knowledge is increasingly becoming, the world over, the most important factor determining our standard of life, more than land, tools and labour. Our study focuses on the knowledge entrepreneurs of India.

Literature Review

Peter Drucker defines a 'knowledge worker' as—"Someone who knows more about his or her job than anyone else in the organization". Knowledge is the ability to transform our resources to our advantage.

The adoption and use of IT to achieve competitive advantage has received a great deal of attention in IS literature, but essentially in large corporations. Research dealing with just the large corporations creates a potential bias in substantive conclusions about IT because firm size can affect several crucial organizational processes. Most of the SMEs are controlled by individuals, unlike large firms where decisions of IT adoption are relegated to an IT expert. The IT expert and owner merge into one in the SME world. Our paper addresses the scarcity of research dealing with IS in SMEs -especially the lack of research on the contribution of online presence to growth and competitive edge in SMEs. Most IT adoption research dealing with small firms has been exploratory. IS researchers have suggested that intention models from social psychology can provide a foundation for research on IT adoption by firms and IT usage by individuals. Ajzen's (1991) Theory of Planned Behaviour (TPB) is a well- researched intention model in predicting an important behaviour in a wide variety of domains. As the theory describes an active, deliberate decision process within the constraints of social expectations and limited resources, it is especially useful for studying the strategic adoption of IT in small businesses. In our paper, we empirically examine the capabilities of TPB to predict and explain how small businesses decide to adopt IT to grow and compete as entrepreneurs.

Methodology

The research of and Harryson et.al (1997) shows that research on IT adoption in small business should be flexible enough to involve a wide variety of ITs, especially when the sample is drawn from a heterogeneous population. Our study examines the responses to a questionnaire survey from a sample population of entrepreneurs in the SME sector drawn from India. Our instrument of survey consisted of 12 questions, which measure entrepreneurial index, and ten questions on use and adoption of IT. SME sector is defined as firms with less than 200 employees and whose turnover is less than RS 250 million, a definition acceptable to the funding agencies including banks in the country. The questionnaire is administered online. In all, about 2000 emails were sent to SME addresses collected online from the Small Scale Industry website of the Govt. of India and the SME forum at the website of NASSCOM (National Association of Software and Service Companies). The survey link was also posted on SME related yahoo groups online. We received 47 responses online and 18 offline. While sending emails, which are collected from the websites of the firms, care was taken to avoid back offices of foreign firms and subsidiaries of firms incorporated abroad. The sample of SMEs is thus indigenous and independent entities, not belonging to a larger corporate group.

When we talk of adoption of IT/IS, we are not looking at a simple task oriented software package or application but a technology designed to meet immediate operational needs, technology as a long term strategic competency.

Research question

The broad research question we address is “ Does the use of IS motivate knowledge entrepreneurs?” The following hypotheses associate the degree of adoption with a measure of entrepreneurship.

Hypothesis 1

In SMEs, decisions (intentions) to use IS are a positive linear function of

a) External stimuli b) Perceived control over adopting that IS. c) Learning curve of the executive who takes decisions

Hypotheses 2

The degree of adoption of IT in SMEs is a degree of the measure of entrepreneurship of the chief executive.

Hypotheses 3

Perception of risk/threat is a deterrent in adopting new technology in the case of SMEs.

Hypotheses 4

Infrastructure bottlenecks cost and hygiene factors are deterrents to use of IS

Results and analysis

Out of the 72 responses received 25 are from manufacturing, 22 from services, 17 from IT services and 8 from traders. The location of the firms is widely spread covering major cities of India, having a population of more than 1 million. 74% of the respondents claimed average and good expertise in use of computers. 23% claimed good to professional expertise. 58% of the respondents had no IT training. 82% of the respondents employed less than 50 people. 50% of the respondents agreed to necessity being the motivator for becoming an entrepreneur. Necessity

The 22 questions in the survey (**Please see annexure I**) assess the entrepreneurial index of the respondent and the perceived and actual usage of IT in the firm. While all SMEs are run by entrepreneurs, the motivation for becoming an entrepreneur can vary. The first ten questions assess the motivational causes for becoming an entrepreneur on a Likert scale of 1-5. Seven questions refer to the perceived and actual use of IT. Five questions measure the entrepreneurial index of the respondent. For formulating the questions on entrepreneurial index we borrowed heavily from the First Annual Global Entrepreneurial Symposium held on April 29, 2003 at United Nations Headquarters.

A bivariate correlation matrix of the variables using Pearson’s correlation coefficient and two- tailed significance test is given under. Correlation coefficients where where $p < .05$ are shown in red. (Please see **Annexure III** along with **Annexure II**, which lists out the short names of variables used in the matrix.)

The major findings of our empirical study are given below.

1. 50% of the respondents had agreed to necessity being the motivator for becoming an entrepreneur. Necessity showed strong positive correlations with seeing an opportunity and opening up of the market. More than 70 % of the respondents started their business after 1991 when the Indian economy started opening up. Necessity and stake of the entrepreneur also showed strong correlations significant at .001, but in the opposite direction.
2. Those who rated IT training as a major motivator to become an entrepreneur, rate the possibility of their business depending on high speed internet high. ($r=.2962$, $p=.012$)
3. Those who rated the availability of funding as least important motivator to become an entrepreneur, rate the possibility of their business depending on high speed internet as high. ($r=-.2736$, $p=.020$)
4. Those who rated the availability of funding as least important motivator to become an entrepreneur, rate their expertise on usage of IT as high. ($r=.3241$, $p=.005$)
5. Those who rated the availability of funding as the least important motivator to become an entrepreneur, rate the maximum usage for IS in their firm. ($r=.3995$, $p=.001$)
6. Those who rated the availability of funding as the least motivator to become an entrepreneur, rate usefulness of website beyond a mere 'web presence' as high. ($r=-.3023$, $p=.010$)
7. Entrepreneurs who perceived innovation of product/services high also rate dependence on high speed internet high. ($r=.3480$, $p=.003$)
8. Entrepreneurs who rate innovation of product/services high also rate their expertise in IT high. ($r=.3883$, $p=.001$). Their perceptions of an online presence going beyond a mere presence was also high ($r=.3241$, $p=.005$)
9. Those who rate high on entrepreneurial index also rate high on expertise in IT ($r=.3756$, $p=.001$) and use of IS ($r=.4298$, $p=.000$)
10. Those who rate high on entrepreneurial index also tend to allocate more funds for IT. ($r=.2961$, $p=.012$)
11. Those who rate their expertise in IT high also allocate maximum resources to IT as a percentage of total capital investment ($r=.3498$, $p=.003$)

Hypotheses revisited

Results 2-6 support our first hypothesis namely, in SMEs, decisions (intentions) to use IS are a positive linear function of

- a) External stimuli
- b) Perceived control over adopting that IS.
- c) Learning curve of the executive who takes decisions

Results 7 and 8 give indirect support to the first hypothesis – The growing use of IS results in a growing perception of innovative products and services in the CEO's mind. As innovation is a strong index of an entrepreneur, this supports our broad research question namely, use of IS motivates knowledge entrepreneurs.

Results 9 and 10 support our second hypothesis, namely the degree of adoption of IT in SMEs is a degree of the measure of entrepreneurship of the chief executive.

Hypotheses 3 and 4 are not supported. However fear of failure/low return is positively correlated with using the full objective of the website ($r=.2815$, $p=.017$).

Limitations of the study

- The questionnaire is attempted online. This presupposes availability of good internet access to the respondent. About a third of the responses were collected offline to offset this limitation to some extent.
- The sample size could be bigger. The decay rate for online responses is normally as high as 98%. (Terri C. Albert et. al.) In our case the responses are about 3% of the mails sent, which resulted in our using a fairly small sample in testing our hypotheses.
- The study can be enriched by getting the figures for actual increase in entrepreneurial SMEs over the last, say five years in India- the period when adoption of IT use of IS has increased. . However public records for SMEs are difficult to come by especially for tiny and micro enterprises.
- There is need to have a common definition of SMEs applicable universally.

Research Directions

It will be interesting to extend the research to impact of IT/IS on clusters of micro enterprises and on the social entrepreneurs in particular. Further insight can be obtained by extending the survey to the Asia Pacific region as a whole. The region as a whole is characterized by necessity driven entrepreneurship and the role of IT/IS in realizing the full potential of the knowledge entrepreneur needs to be examined.

Conclusions

In our study, IS use is examined at a micro level, one that involves users or decision makers - this is a context in which the diffusion of technology is paramount. In today's environment, many applications that become strategically important can begin as standalone programs designed and used by end users. Eventually, through initiatives by management or by the users themselves, these applications are identified as being important to the success of the firm, not just to the individual user. Leveraging this technology, many an individual user goes on to expand the level of operations - and an entrepreneur is born. Our empirical study lends support to this theory. We have identified some variables, which influence this migration from an individual to an entrepreneur; IT training, availability of high speed internet and funding or lack of it- are some of them. How prevalent is this phenomenon in present day India where IT adoption is still in transitional stage? This needs to be further examined in the light of secondary data available with SME forums and associations. Empirical evidence supporting the research question can be extended further with the help of TPB to arrive at deliverables to foster entrepreneurship in the country.

According to NASSCOM, IT industry contributes about 3% to the country's Gross Domestic Product (GDP). Approximately 15% of the contribution to this revenue comes

from SMEs. They expect the percentage of contribution by SMEs to grow upto 60% by 2008. Our research will help to plan this growth in a structured way.

The CEO whose expertise in IT is high also allocates more funds to IT (Result No.11). The advantage of the IT expert and CEO merging into one is immediately translated into action. This is corroborated by the fact that 48 percent of total tech spending of IBM South in India comes from the small and medium scale enterprises. (Figures 2004).

Understanding the distinct behaviours that entrepreneurs practice in developing decision processes and information systems provides a conceptual framework for further academic research on the SMEs. The study also provides a practical framework for use by individuals involved in startups.

References

- Ajzen, I., (1991) The Theory of Planned Behaviour, *Organizational Behaviour and Human Decision Processes*, 50, pp 179-211
- Ajzen and M. Fishbein, (1980) *Understanding Attitudes and Predicting Social Behaviour*, Prentice- Hall, Englewood Cliffs, NJ,
- Barua A., Kriebel C.H. and Mukopadyay (1995) Information Technologies and Business Value: an analytic and empirical investigation, *Information Systems Research*, 6(1), 3-23.
- Benbasat I, Goldstein D.K and Mead M. (1987) A The Case Research Strategy in Studies of Information Systems, *MIS Quarterly*, 11(3), 369-385.
- Bohn R E (1994) "Measuring and Managing Technological Knowledge" *Sloan Management Review*, 36(1) 61-73
- Chenhall R.H and Morris D. (1995) "Organic Decision and Communication Processes and Management Accounting systems in Entrepreneurial and Conservative Business Organizations" *Omega*, 23(5), 455-497.
- Delone, W. H., (1988) "Determinants of Success for Computer usage in Small Business." *MIS Quarterly*, 12, 2, pp 259-274.
- Denis and Reinicker (2004) "Electronic Brainstorming Technology" *MIS Quarterly* 28(1), 1-20
- Harrison D.A., Mykytyn P.A Jr., Reimenschneider C.K (1997) " Executive Decisions About Adoption of Information Technology in Small Business: Theory and Empirical Tests", *Information Systems Research* Vol.8, 2. Pp 171-195
- Ian Hipkin (2004) "Determining Technology Strategy in Developing Countries" *Omega* 32(3), 245-260
- Kanungo S. (1997) " IS Research in India: Gaps and Imperatives", *Information Technology at Work* Hindustan Publishing Corporation, New Delhi
- Kanungo S., Sharma S., Jain P.K., (2001) " Evaluation of a decision support system for credit management decisions" *Decision Support Systems*, 30, pp 419-436
- Kreueger, N F and A.L Carsrud. (1993) " Entrepreneurial Intentions: Applying Theory of Planned Behaviour," *Entrepreneurship and regional Development*, 5 pp 315-330
- Muhlemann A, Price D, Afferson M and Sharp J (1995) "A Computer Based Approach for

- Enhancing Manufacturing Decision Making in Smaller Manufacturing Enterprises: A Longitudinal Study" *Omega*, 23(1), 97-107.
- Sooryamoorthy R and Wesley Shrum (2004) " Is Kerala Becoming a Knowledge Society? - Evidence from the Scientific Community" *Sociological Bulletin* 53(2) 207-221.
- Terri C. Albert, Paulo B. Goes and Alok Gupta (2004) " GIST a model for design and management of content and interactivity of customer centric websites" *MIS Quarterly* 28(2) June 2004