Adoption of Ecommerce in Indian SMEs: A Study in the State of Telangana

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Abstract: Information and communication technology (ICT) has brought about a complete change into every walk of life today with business not being an exception to it. Organizations are increasingly embracing new generation business tools like the e-Commerce and e-Business for attaining their goals. E-Commerce has been emerging as a new method of helping enterprises to compete in their marketplace and thereby contributing to their economic growth. In an increasingly competitive and globalized world, SMEs need to compete more effectively to boost domestic economic activities and contribute toward increasing export earnings. SMEs also continue to play an important role in increasing employment and thus contributing to poverty reduction on a sustainable basis. With spread of technology and infrastructure, rural businesses will be the biggest beneficiaries of e-Commerce. The Internet can help small enterprises to present themselves to the world. With this backdrop this paper tries to present the e-Commerce scenario in the SMEs of Telangana, the prospect of future growth and the empirical analysis of the factors influencing the adoption of e-Commerce. Through a survey of sample organizations it was found that, although the rate of adoption is not satisfactory, but the entrepreneurs/ managers are quite optimistic regarding the e-Business applications. This paper also tries to state an analytical view of the e-Commerce adoption scenario by revealing the relationship between the factors like Organizational support, Managerial Productivity, Decision Aids and organizational Readiness, External Pressure, Compatibility, Perceived Ease of Use & perceived Usefulness with the perception of these SMEs owners/managers. Statistical Data Analysis like Multivariate data analysis through Canonical Correlation Analysis (CCA) is done to test empirically the Average scores of variables under perceived strategic value and adoption across present position (in years), Average scores of variables under perceived strategic value and adoption across type of industry to test the significance of these factors. Finally a model is proposed for the adoption of ICT & e-Business technologies, by considering the overall business scenario of the state which includes both the internal as well as the external business environments of the sample organizations'.

INTRODUCTION

It is recognized widely that e-commerce can offer substantial opportunities for Small and Medium sized Enterprises (SMEs) to compete in the global market. In developing countries, e-commerce opportunities can be a meaningful approach for SMEs to be able to compete with large businesses and to access, with lowest possible costs, international markets. However, the current situation shows that SMEs continue to lag behind in maximizing their capabilities in taking these chances. Universally, they are reported to be slow adopters of new technologies as a result of limited financial resources and lack of expertise. The importance, of SMEs, emerged from their positions since they contributed more than 50% of the economy and they were considered to be the backbone of any economy.

Hence, the main purpose, of conducting this research, is to increase the body of knowledge about the Adoption of e-commerce of the SMEs in Telangana. This will done by a primary empirical focus on small and medium sized enterprises (SMEs) in Telangana. This study aimed to investigate the factors which could influence the SMEs' adoption of e-commerce. In order to accomplish this objective, investigation will be done on the previous studies, on the same approach, in order to identify the gap, within the literature, regarding the impact of e-commerce on the profitability of SMEs in Telangana. Additionally, existing theories on the adoption of innovation would be integrated in order to develop a conceptual framework for the determinants of the adoption of e-commerce in the SMEs sector.

LITERATURE REVIEW

As per **"Developing Relationship Marketing Strategies by Implementing E-COMMERCE Technology in Industrial Markets**", ICFAI university press, 5(1), 35-40 (2006) by Raju T.V. and Gopal's R.K, consider that key to success in industrial marketing is e-commerce and in need to be practiced by the organization immaterial of the size of their operation. The e-commerce practices need to be innovative and it should be based on the capabilities of the marketers. They propagate to classify the customer on the basis of their focus area in terms of relationship and make a cost benefit analysis before involving in e-commerce.

As per **"Role of Retailers In Reducing Inventory And Improving Customer Satisfaction: An Empirical Study Consumer Non-Durables."** journal of Marketing, 36-43 (2008) by Aggarwal Vaishali, Agarwal, Vaishali has the opinion to evolve the consumers through innovative marketing practices through internet blogs, e-commerce etc. beat competition.

As per **"Indian SMEs Have a Long Way to Go, SME WORLD"** – Complementary with the Financial Express, The Indian Express Limited, Mumbai, (4,6 and 8) (2009) by Bhatnagar Jyotsna, says that to face the competition at international level SMEs need to look for formal cluster approach. This innovative e-commerce approach will help the SMEs to build on cohesive market strategies to

As per **"The new Government, will no doubt bring cheer to the sector, SME world, Complementary with the Financial Express,"** The Indian Express Limited, Mumbai, (26) (2009) by Dikshit, Dheeraj is having the opinion that SMEs should re-look at their business model and establish their core competencies, through e-commerce. He also insists on SMEs to look beyond the domestic market to grow.

As per **"E-commerce and Economic Development(A Study Sponsored by the South Asia Network of Economic Research Institutes)"** Foundation for Public Economics and Policy Research(2005) by Mahesh C Purohit and Vishnu Kanta Purohit the entire process of e-commerce has to

be economic service oriented as in the case of the postman carrying a mobile phone as a PCO to small entrepreneurs like Nancy Rani, setting up of a village Internet booth, or a large corporate like ICT establishing an "e-Chaupal" in over 14,000 villages, where the beneficiary pays for the information and the enterprise creates a win-win situation for all concerned.

As per **"Empowering Women Through ICT-Based Business Initiatives: An Overview of Best Practices in E-Commerce/E-Retailing Projects"** The MIT Press 2008 by Usha Nair and Sylvia Maier, Information and communication technologies (ICTs) have been increasingly promoted as a key solution for comprehensive development, poverty eradication and the empowerment of historically disadvantaged groups, such as women and minorities in the Global South. ICT-based business initiatives, and e-commerce projects in particular, have been hailed as "potential goldmines" for women's empowerment.

As per **"HOW DO AUSTRALIAN SMALL AND MEDIUM ENTERPRISES COMMUNICATE THEIR ENVIRONMENTAL IMPROVEMENT ACTIVITIES ONLINE?"** Australasian Journal of Information Systems 2010 by Craig M. Parker/Bardo Fraunholz/Ambika Zutshi/ Merete Crofts there is considerable variation in how the websites are used. For example, the study showed that some SMEs use their website to promote an environmental improvement profile, while others describe the environmental improvement features of their products/services. Some have used the website to communicate the ways in which they have changed their business processes to be more environmentally responsible.

As per **"ICT For Economic Growth In Andhra Pradesh, A State In India"** International Business & Economics Research Journal - May 2007 Volume 6, Number 5 by T.P. Pavan Kumar, Andhra Pradesh has taken-up many initiatives to transform into knowledge based economy. The high literacy rate, growing manufacturing and service sector, availability of skilled manpower, private sector investments, good telecom, power and road infrastructure etc., are the good reasons for the State Government to formulate ICT policies and initiatives to achieve accelerated growth and bridge digital divide

As per **"E-commerce and virtual enterprises: issues and challenges for transition economies"** 2002 Elsevier Science Ltd by Louis A. Lefebvre and Elisabeth Lefebvre, Electronic commerce (e-commerce) is a phenomenon that is arousing avid interest in industrialized countries and, more recently, in the developing world. Is this a passing fancy or just another distribution channel which companies are free to get involved in or not? Or, on the contrary, is it a must if one is to stay in business and prosper? This paper looks at some of the technological issues and challenges related to e-commerce and the emergence of virtual enterprises.

As per **"Online and upcoming: The Internet's impact on India"** Mckinsey&Company 2012 by Chandra Gnanasambandam, Anu Madgavkar, Noshir Kaka, James Manyika, Michael Chui, Jacques Bughin, Malcolm Gomes, In the four decades since its inception, the Internet has driven dramatic change. It has

enabled flows of information, including entertainment, news, and financial and academic material. It has brought people closer together by enabling various forms of interpersonal communication, notably e mail, instant messaging, video conferencing, and social networking. And it has allowed consumers to purchase virtually anything at any time, while providing producers with direct access to a wide range of markets.

As per **"TOWARDS IMPROVING INTER-ORGANISATIONAL TRUST AMONGST SMEs: A CASE STUDY FROM DEVELOPING COUNTRIES"** by Dili Ojukwu and Elli Georgiadou SMEs

in developing countries are major contributors to the economic growth of their respective economies. For them to adequately play this role however, they need to earn the trust of the global community in their business relationships. For this to happen, their IOT with businesses across the globe must be enhanced and maintained at a high level.

As per **"Prospects of E-Commerce in India"** by Shweta Sharma, Sugandha Mittal Many countries in Asia are taking advantage of e-commerce through opening of economies, which is essential for promoting competition and diffusion of Internet technologies. Large enough to have a critical mass of 10 to 20 million users to be able to make an impact on e-commerce and e-governance.

As per **"Internet Development Opportunities for Small to Medium Sized Enterprises in Ukraine"** by Brendan Dcruz, Shafqat Hameed Much has been speculated about the role the Internet will play in developing countries in terms of how services to citizens are provided, and how entrepreneurial opportunities similar to developed nations can be created. This is an important issue for individual government policy, particularly as bodies such as the World Bank and the World Trade organization are in favor of greater global ecommerce regulation within less restrictive international e-business and trade frameworks.

As per **"Analyzing the effects of electronic commerce on organizational performance: Evidence from small and medium enterprises"** by Asghar Afshar Jahanshahi, To be successful in the e-business environment, government policies must be focused on developing and deploying a robust telecommunications infrastructure enabling and facilitating increased user access to the Internet, developing rigorous regulations and legal structures to support e-commerce initiatives, protect users against fraud, and provide fiscal policies that stimulate business growth.

As per **"Emerging Trend of E-Commerce in India: Some Crucial Issues, Prospects and Challenges"** by Sarbapriya Ray the bursting of the dotcom bubble has made several companies apprehend that doing business on the Internet is not as easy at it sounds. Undoubtedly, the power of the Internet to reach any part of the world holds terrific potential for enhancing international trade and boosting global economy. However, just as every coin has a flip side; it has been observed that doing business on the Internet also has risks and legal issues associated with it.

As per **"A Survey on Growth and Success of E-Commerce in Recent Trends"** by Mohammed Ali Hussain,

The infrastructure is the architecture of B2B e-commerce, primarily consisting of 1.Logistics - Transportation, Warehousing and Distribution, 2. Application Service Providers - Deployment, Hosting and management of packaged software from a central facility, 3. Outsourcing of functions in the process of e-commerce, such as Web hosting, security and customer care solutions, 4. Auction solutions software for the operation and maintenance of real-time auctions in the Internet, 5. Content management software for the facilitation of Website content management and delivery

As per **"A REVIEW OF THE CONTEMPORARY REGULATION AND STATE OF E-COMMERCE SECTOR IN INDIA"** by CS Sunil Sharma E-commerce just means taking things that your company is already doing in person, through the mail, or over the telephone, and doing those things in a new place on the Internet. The bookings done through electronic communication could be Business to

Business (B2B) or Business to Consumer (B2C). Business to Business i.e. B2B is e-commerce between businesses such as between a manufacturer and a wholesaler or between a wholesaler and a retailer.

As per **"E-Commerce: Challenges and Future Potentialities in India"** by Saroj Kumar Singh E-commerce in India will be successful in true sense only when people in semi-rural and rural areas will be able to derive its benefits. To do this, initiatives by government and e-commerce companies alike should be made to make supply chain robust and payments hassle-free.

As per **"A Study of Planning and Implementation Stages in Electronic Commerce Adoption and Evaluation: The Case of Australian SMEs"** by Chad Lin, most SMEs failed to link their objectives for ecommerce adoption with their organizational goals and to involve users during the planning stage. Additionally, pre-project justification process and change management were often not carried out by these SMEs to assess the needs and feasibility of these IT investments in e-commerce

As per **"Empowering Women Through ICT-Based Business Initiatives: An Overview of Best Practices in E-Commerce/E-Retailing Projects"** by Sylvia Maier, ICTs have been increasingly promoted as a key solution for comprehensive development, poverty eradication and the empowerment of historically disadvantaged groups, such as women and minorities in the Global South. ICT-based business initiatives, and e-commerce projects in particular, have been hailed as "potential goldmines" for women's empowerment.

As per **"The state of E-Business in Scottish SMEs: Lessons Learned"** by Hesham Magd, It is understood that the most important realized benefits from e-business were: Improving the competitive position; Customer satisfaction enhancement; Reducing operational costs; Reach new markets/customers; Establishing, expanding and improving brand image; and improving relationships with suppliers/partners.

As per **"Impact of eBusiness technologies on operational performance: The role of production information integration in the supply chain"** by Sarv Devaraj, Firms should invest in eBusiness capabilities if they want to enhance their production information integration intensity. Nonetheless, firms should not try to justify investments in eBusiness technologies on the basis of their immediate impact on operational performance

As per **"The Impact on Electronic Commerce Activities of SMEs: A Study of the Turkish Automotive Supplier Industry"** by Muammer Zerenler, electronic commerce is developed almost in every industrial sector as witnessed by the increasing number of examples. It provides too many advantages and benefits to companies and other organizations. Electronic commerce has significantly transformed the way in which firms conduct business, allowing them to gain more business opportunities and competitive advantage.

As per **"The Role of Government Policy and the Growth of Entrepreneurship in the Micro, Small (&) Medium-sized Enterprises in India: an Overview"** by Afshar Jahnshahi Asghar, MSMEs have emerged as an engine of growth in several developed and developing economies of the world. In India also, they have emerged as a vibrant and dynamic component of the economy by virtue of their significant contribution to GDP, industrial production and exports.

As per **"Effectiveness of Make in India Policy in Promoting Inflows of FDI in Different Sectors of Indian Economy"** by Shafi PP, This policy is a great dream of most visionary and influential Prime Minister of India,. Narendra Modi, who initiated this economic reform-oriented program on 25

September 2014 in a way to improve the employment and manufacturing industry in India. This policy has a wide scope, associated with different sectors of the economic environment of the country.

As per ICT for Economic Growth in Andhra Pradesh, A State in India by T.P. Pavan Kumar, The ICT Model and approach of South Korea distinctly suits the State. The Government needs to bring in policies that would not only create opportunities for employment but also encourage the entrepreneurial spirit that exists among the youth.

As per **"The Development Impact of Information Technology in Trade Facilitation"** by Florian A. Alburo, the argument that IT in TF adversely affects SMEs is not really due to the IT system in place but their inability to meet automation pre-conditions. In fact the country studies do point to the indirect use of the IT by SMEs through the out-sourcing of trade formalities to brokers and CHAs.

As per **"IS E-MARKETING COMING OF AGE? AN EXAMINATION OF THE PENETRATION OF E-MARKETING AND FIRM PERFORMANCE"** by RODERICK J. BRODIE concluded that eM's "coming of age" is a consequence of eM being integrated into current marketing practices.

As per **"Adoption of Electronic Supply Chain Management and E-Commerce by Small and Medium Enterprises and Their Performance: A Survey of SMEs in Pakistan"** by Shahzad Ahmad Khan found that encouraging implementation of E-Commerce at SMEs in Pakistan, has increased growth in sales revenue, timely order and delivery to customer, lowed expenses in developing and maintenance a website, and increased the numbers of customers. This study has shown that SMEs used E-SCM most extensively to support all the processes of their logistics activities.

As per **"An Appraisal of the Impact of Information Technology (IT) on Nigeria Small and Medium Enterprises (SMEs) Performance"** by Akande Olusola, SMEs need to sense more strategically in relation to the use of IT. In this respect, SMEs are falling behind best practices adopted by their larger counterparts in the global economy. There should be ease of use to free professional advice and consulting on IT at reasonable cost to SMEs.

As per **"Perceived barriers towards the use of e-trade processes by Korean SMEs"** by Ka-Young Oh, believes an awareness and understanding of how barriers are perceived should help to increase the diffusion of e-trade systems.

As per **"COMPETITIVE ADVANTAGE THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ENABLED SUPPLY CHAIN MANAGEMENT PRACTICES"** by Gyaneshwar Singh Kushwaha, SMEs in the developing nations should integrate into the global supply chain, bid for outsourcing businesses, and increase their own productivity. In the course of time, however, their reliance on the informal sector of the economy for fetching raw material and informal goods should not become exploitative in nature. The key for SMEs is that the information and communication technology provides so many options and avenues to take advantage of in a way that big business just can't or doesn't see value in.

As per **"PROMOTING SME DEVELOPMENT: SOME ISSUES AND SUGGESTIONS FOR POLICY CONSIDERATION"** by Thitapha Wattanapruttipaisan larger proportion of global output is now exported. The ratio of world exports to production was just under one fifth in the late 1990s, compared with only 12 per cent in the early 1980s (ESCAP 2000: 8-9).

As per **"Voices of Experience: Developing Export Capability through eCommerce in Australian SMEs"** by Tanya Castleman, the provision of consolidated, impartial information and advice about eCommerce use for export, including raising general awareness about eCommerce. To this end the government should work with private providers, training and skills development to facilitate the implementation of eCommerce, improvement in the infrastructure on which eCommerce depends.

As per **"E-commerce and virtual enterprises: issues and challenges for transition economies"** by Louis A. Lefebvre, E-commerce, though it is still in an embryonic condition, is growing rapidly and is likely to have a dominant position in the knowledge economy of tomorrow. Already its economic impact is much greater than was predicted not so long ago, as it is not limited to the Internet— which, though its role as a catalyst is important, is only one of the media involved.

As per **"DESIGNING AN ASSESSMENT TOOL FOR MEASURING E-READINESS OF IRANIAN ICT COMPANIES"** by Ali Nabavi, The companies are performing well on the "E-infrastructure" dimension. Perhaps, this is due to the fact that cost of ownership of technologies are becoming cheaper and enable painless penetration of ICT into companies of varying sizes and levels.

As per **"Determinants and Impact of ICT use for African SMEs: Implications for Rural South Africa"** by Susanna Wolf, show clearly that investment in ICT is one important determinant of total factor productivity once a certain threshold is passed. As the use of different levels of ICT - telephone, fax, mobile phone and computer - is linked to the level of education of the workforce we assume mutually enforcing effects.

As per **"Perception of Barriers to e-Commerce adoption in SMEs in a Developed and Developing Country: a Comparison Between Australia and Indonesia"** by Robert C. MacGregor, Despite the proven potential of e-commerce in the small business sector, studies have shown that larger businesses have reaped the benefits, with SME adoption remaining relatively low by comparison. This slow growth of e-commerce adoption in SMEs has been attributed to various adoption barriers that are faced by small business owners/managers. These barriers have been well documented in numerous research

As per **"THE PRESENT E-COMMERCE SITUATION IN BANGLADESH FOR B2C E-COMMERCE"** by Roni Bhowmik, Nowadays every second world moving so fast only used by technology positive side, Bangladesh is a small and developing country but it's time to changing. In the world most of the country day by day more popular B2C E-commerce system even Asian some country; China, India, South-Korea and Japan. B2C E-Commerce is the system of buying and selling of goods and services business to customer over electronic medium.

As per **"E-Commerce In India: On an Upswing"** by Dr. Sugandha Agarwal, The country's growing Internet habituated consumer base, which will comprise 180 million broadband users by 2020, along with a burgeoning class of mobile Internet users, will continue to drive the e-commerce in the country. There is a deep insight to observe that the youngsters are open to change, tech savvy and given the right ecosystem they do not shy from adopting the new, has carved a better and growth oriented path for the e-commerce.

As per **"Barriers to Adopting ICT and e-commerce with SMEs in Developing Countries: An Exploratory study in Sri Lanka"** by Mahesha Kapurubandara, Adoption of ICT and e-commerce in SMEs developing countries is different from the developed countries. The SMEs in developing countries

fall behind with adoption due to barriers, both internal and external, prominent and inherent in a developing country.

As per **"E-FINANCE FOR SMEs: GLOBAL TRENDS AND NATIONAL EXPERIENCES"** by Rouben Indjikian, The improved tax regimes and simplified regulations as well as other support measures will permit SMEs to move towards the formal economy, improve on reporting on their assets and liabilities and hence enter in the Internet based credit information data bases. That might create a fundamental positive change in financial community's perception towards SMEs as credit risks. In its turn, the SMEs will be encouraged to use online banking and payments services as a part of their common business practices,

As per **"Balanced scorecard and performance management system: A study of four Indian small and medium size enterprises"** by Ratnavali R, Sreenivasa Murthy S, culture as a major determinant of the effectiveness of the performance management system, goal alignment indicates moderate correlation on the BSC perspectives and finally the people perceptions at different levels indicate that the impact of the change has not been felt the same way across the company.

As per **"E-Procurement adoption in the South coast SMEs"** by Angappa Gunasekaran, RonaldE.McGaughey , EricW.T.Ngai , BharatendraK.Rai, Readiness did not seem to be the primary issue thwarting adoption, as they had the basic infrastructure and organizational conventions in place to engage in E-procurement.

As per **"E-commerce technology adoption: A Malaysian grocery SME retail sector study"** by Sherah Kurnia, Electronic commerce (EC) has substantial potential to foster the growth of small and medium-sized enterprises (SMEs) in developed and developing countries alike. However, EC adoption by SMEs in developing countries has faced many challenges that have not been adequately addressed due to the complex nature of EC adoption in such countries.

As per **"E- Commerce Technology Adoption: A Malaysian Grocery SME Retail Sector Study"** by Sherah Kurnia, provides an integrated view on EC adoption for the Malaysian grocery SME context by considering various e-readiness factors affecting three different levels, namely organization, industry and national.

As **per "Enabling the business strategy of SMEs through e-business capabilities: A strategic alignment perspective"** by Louis Raymond, It is recognized that SMEs must be flexible and readily adaptable to change, be it competitive, strategic, operational or technological in nature. In a business environment that has become more complex, a number of these enterprises have already possess e-business capabilities in the form of e-intelligence, e-commerce and e-collaboration in order to improve their competitive position.

As per **"IMPACT OF LIBERALIZATION ON CONTRIBUTION OF MSMES IN ECONOMIC DEVELOPMENT OF INDIA"** by S. L. GUPTA & R. RANJAN, The policy of liberalization which was aimed to deregulate the market and keep investments flowing did manage to increase the number of units, but their overall productivity leaves a lot to be desired. Increase in number of Units and Employment have shown proportionate growth over the period,

As per **"CHALLENGERS AND BENEFITS FUTURE TRENDS OF E-COMMERCE GROWTH IN INDIAN BUSINESS"** by Dr.G.Ramadoss and Dr.G.Muthuvel, A developing country

can become industrialized and modernized if it can extensively apply IT to enhance productivity and international competitiveness, develop ecommerce and e-governance applications. An information-based society or knowledge based society is composed of IT products, IT applications in society and economy as a whole. Many countries in Asia are taking advantage of E- commerce through opening of economies, which is essential for promoting competition and diffusion of Internet technologies.

As per **"Electronic Commerce and Internationalization in New Zealand SMEs"** by Jia JIA, For New Zealand SMEs, the urge to be competitive in order to grow drives the need to find out what can strengthen the twelve pillars of competitiveness shown above. In this regard, two sources for SMEs' competitiveness were identified and studied in this research, namely internationalization and e-commerce adoption. Internationalization is not a new phenomenon, and in this research it was found that the internationalization of business seems to be irreversible, even under today's global economic gloom.

4. OBJECTIVES AND METHODOLOGIES

Research Objectives

The present study tries to examine the relationship between IT adoption and the value creation for the firms. The broad objective of the study is to understand the status and factors of adoption of IT in SMEs in Telangana. The specific objectives are –

1. To identify the factors which affect the adoption of IT in SMEs
2. To examine the factors influencing the perceptions of owners and managers in SMEs
3. To suggest a model for improvement of IT adoption by SMEs in Telangana

5. RESEARCH DESIGN AND METHODOLOGY

Data Source

The present study is mainly based on field survey and is exploratory in nature. The subjects for the study are the top executives of the firm who are either the top managers or the owners. The units for the study are mainly of small and medium sized enterprises (SMEs) from a variety of industries operating in Telangana and are registered with the District Industries Centers (DICs) of the state. The sources of data are mainly primary in nature, which have been collected from the owners / top managers through a structured questionnaires designed for the purpose.

Sample Profile

The present study has been conducted on the small and medium enterprises (SMEs) in the state of Telangana. The sample for the study comprises of 41 owners / managers of the SMEs. While choosing a respondent, purposive sampling method was followed to give proper representation to different types of industries across different product category.

Instrument Development and Data Collection

As stated above, the data for the study were collected through a structured questionnaire from the respondents. After reviewing the literature, relevant dimensions were identified to draft the preliminary

questionnaire. Then a pilot survey was conducted to solicit the opinion regarding development of the questionnaire. For designing the questionnaire, the scale suggested by Grandon and Pearson was suitably modified for the purpose. Respondents were asked to complete the survey that have the following major sections for drafting the questionnaire:

- Demographic questions (respondent's gender, age, education, years of work in present position, and years of work in present firm).

- General questions about the firm (number of employees and industry).

- Questions about the technology in the organization (number of PCs, presence of Internet Service Provider (ISP), presence of web site, and utilization of e-Commerce).

- Questions asking the extent to which IT is perceived as contributing / hindering factor to the SMEs (benefits and barriers).

- Questions to measure the factors involved in e-Commerce adoption.

- A seven-point Likert scale, from strongly disagree to strongly agree has been used to measure the questions about perceived strategic value and adoption of IT.

The results of the pilot study were validated by conducting the reliability test (Cronbach's á). The final questionnaire has six sections. The first two sections deal with demographic profile of the respondent and the unit. The third section deals with the perception of strategic value of e-Commerce and the fourth section with adoption of e-Commerce. The last two sections enumerate the perceived benefits and barriers by using e-Commerce. Further, a follow up interview was conducted with the respondents to check the reliability and correctness of the data.

Tools and Techniques Used for Data Analysis

The data collected through the questionnaires are tabulated in a data sheet and are processed through the statistical package SPSS. Cross tabulations and frequency distributions are made to understand the underlying relationships among the demographic variables and factors of adoption under study keeping the broad objectives in mind. The perception of respondents regarding the benefits and barriers were also tabulated by calculating the weighted average and then compared across different demographic parameters by using analysis of variance (ANOVA) and t-test. Chi-square statistics were calculated to test the goodness of fit of the distribution. Correlation and multivariate analysis such as factor analysis; canonical analysis and structured equation model too have been used in the study.

6. THE RESEARCH MODEL

The research model taken in the study has two basic ingredients, i.e., (1) perception of strategic value of e-Commerce and (2) the adoption of e-Commerce.

Perception of Strategic Value of e-Commerce

In Perception the three major variables are the sources of perception of the strategic value of e-Commerce. They are described as
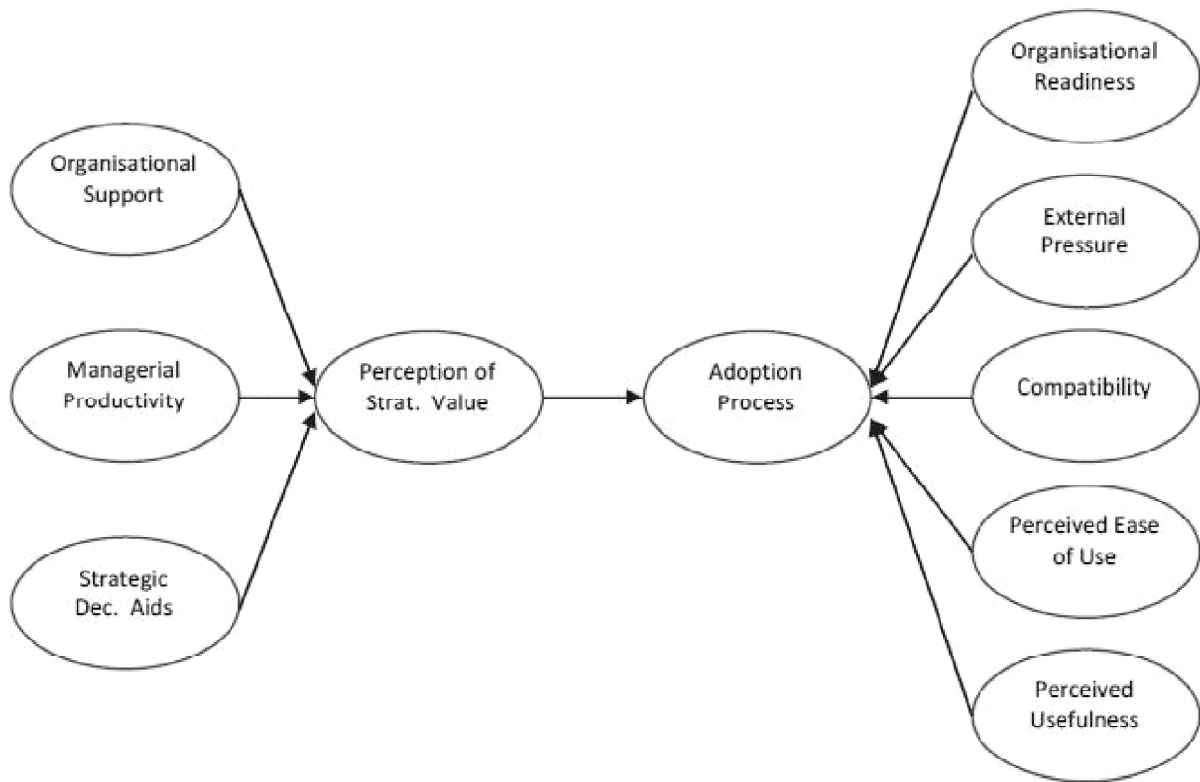
Figure 1: The Research model

Organizational support: It measures how e-Commerce can reduce costs, improve customer services and distribution channels, provide effective support role to operations, support linkages with suppliers, and increase ability to compete.

Managerial productivity: It suggests how e-Commerce can enhance access to information, provides a means to use generic methods in decision-making, improves communication in the organization, and improves productivity of managers.

Strategic decision aids: It defines how e-Commerce can support strategic decisions of managers, support cooperative partnerships in the industry, and provide information for strategic decisions.

Adoption of e-Commerce

In the process of adoption of e-Commerce the five different variables used as identified in prior research are grouped under this head. They are-

Organizational readiness: This is assessed by the financial and technological resources that the company may have available as well as factors dealing with the compatibility and consistency of e-Commerce with firm's culture, values, and preferred work practices (existing technology infrastructure; and top management's enthusiasm to adopt e-Commerce).

Compatibility: It suggests that how the perception of e-Commerce is consistent with the existing culture, values, preferred work practices and technology infrastructure.

External pressure: This is assessed by incorporating five items such as competition, social factors, and dependency on other firms already using e-Commerce, the industry, and the government.

Perceived ease of use: It suggests that how easily e-Commerce can be adopted and practiced in the company as perceived by the managers / entrepreneurs who are the ultimate decision makers in that company.

Perceived usefulness: It suggests that to which extent the managers / entrepreneurs who are the ultimate decision makers of a company perceive the usefulness of e-Commerce to their company.

7. STATISTICAL ANALYSIS

A seven point Likert scale is utilized to measure the questions about perceived strategic value and adoption of e-Commerce. The extent to which the strategic value of e-Commerce was perceived as a contributing factor to adoption of e-Commerce was measured through fifteen parameters. Similarly, twenty-three parameters were chosen to measure the factors influencing adoption of e-Commerce. Responses from the entrepreneurs / managers of 41 sample units were analyzed to understand the perceived strategic value and adoption of e-Commerce in these units.

In order to test the model, confirmatory factor analysis is conducted to measure whether the number of factors involved in the two main constructs, i.e., perceived strategic value and adoption of e-Commerce, confirm to the proposed model. The construct reliability or internal consistency is assessed through Cronbach's α. Table 1 provides the support to the construct reliability, where the values for alpha in respect of all factors are greater than 0.5.

Table 1
Reliability Analysis

Construct	Cronbach's α
Perceived strategic value	
Organizational Support (OS)	0.741
Managerial Productivity (MP)	0.817
Decision Aids (DA)	0.695
Overall - Perceived strategic value	0.892
Adoption of e-Commerce	
Organizational Readiness (OR)	0.806
Compatibility (CC)	0.901
External Pressure (EP)	0.525
Ease of Use (EU)	0.956
Perceived Usefulness (PU)	0.947
Overall- Adoption of e-Commerce	0.942

Source: Authors own calculations

DEMOGRAPHIC PARAMETERS, PERCEIVED STRATEGIC VALUE AND ADOPTION OF ECOMMERCE

Different demographic parameters such as age, gender, qualification, and number of years present in the present position and present company / firm determines the perception and adoption of e-Commerce in

a particular company / firm. It is argued that managers and entrepreneurs of younger age group have more exposure to computer and e-media. Therefore, they can perceive the advantages of use of e-Commerce in their company and accordingly more likely to adopt e-Commerce. Similar is the case for managers / entrepreneurs with high qualification and with presence in that particular position and particular company / firm for a longer period of time. Similarly, perception and adoption of e-Commerce also vary according to type of industries. In order to test whether the perceived strategic value and adoption constructs and the variables under these two constructs differ across demographic variables, the average scores for all the variables have been calculated and tested through 'F' test (Table 2 and Table 3).

The average scores for the variables under perceived strategic value and adoption construct across years of present position of the managers/ entrepreneurs along with their F ratio is given in Table 2. The table indicates that the managers/ entrepreneurs with 5 to 10 years of presence in the present position assign higher average scores to the variables 'managerial productivity', 'decision aids', 'organizational readiness', 'compatibility', and 'perceived usefulness'. The F ratio indicates that there exists difference in the average scores assigned by managers/ entrepreneurs with different years of presence in the present position except for the variable 'external pressure' and 'perceived usefulness' at 5% level of significance.

Table 3 presents the average score for all the variables under perceived strategic value and adoption constructs across the type of industry. Average scores for all the variables under perceived under the two constructs are statistically significant at 5% level of significance indicating that the average scores for all the variables across type of industry are not same and there exists a difference among them.

CANONICAL CORRELATION ANALYSIS

Canonical correlation analysis (CCA) that studies the interrelationships among sets of multiple criterion (dependent) variables and multiple predictor (independent) variables is conducted to explore how the perceptions of strategic value influence the decision to adopt e-Commerce. In order to test the significance of the canonical functions the guidelines given by

Table 2
**Average scores of variables under perceived strategic value and adoption across
present position (in years)]**

Construct	Variable	Present Position (In Years)			F Value	Significance
		Up to 05	05 - 10	Above 10		
Perceived Strategic Value	Organisational Support	5.54	5.34	4.98	5.444	0.005
	Managerial Productivity	5.90	6.09	5.38	5.305	0.006
	Decision Aids	5.50	5.86	5.13	4.846	0.009
Adoption	Organisational Readiness	4.68	5.27	3.80	6.599	0.002
	Compatibility	5.39	5.46	4.70	4.351	0.013
	External Pressure	3.74	3.96	4.10	2.034	0.135
	Ease of Use	5.15	4.52	4.39	3.776	0.025
	Perceived Usefulness	5.45	5.91	5.29	4.519	0.222

Source: Authors own calculations

Hair *et al* are followed . They suggest three different measures to interpret the canonical functions:

Table 3
Average scores of variables under perceived strategic value and adoption across type of industry]

Construct	Variable	Type of Industry								F Value	Significance
		Manufacturer	Educational	Transportation	Wholesale	Construction	Health care	Retail	Information Technology		
Perceived Strategic Value	Organisational Support	5.36	5.33	5.00	4.74	4.91	5.73	5.52	5.68	2.61	0.02
	Managerial Productivity	5.53	6.00	6.50	5.37	5.00	5.94	6.19	6.42	6.34	0.00
	Decision Aids	5.37	6.50	6.00	4.90	4.25	5.78	6.07	5.57	5.44	0.00
Adoption	Organisational Readiness	4.22	5.67	5.50	5.20	4.00	4.28	4.25	5.40	2.99	0.01
	Compatibility	4.99	6.73	5.20	5.36	3.60	5.16	4.86	6.08	8.34	0.00
	External Pressure	3.85	2.00	4.20	3.48	4.80	4.29	4.29	3.77	8.09	0.00
	Ease of Use	4.63	6.80	2.80	4.36	4.20	4.33	4.10	6.14	10.74	0.00
	Perceived Usefulness	5.09	7.00	7.00	4.40	5.00	5.17	5.91	6.20	5.46	0.00

Source: Authors own calculations]

(a) The significance of the F-value given by Wilk's lambda, Pillai's criterion, Hoteling's trace, and Roy's gcr

(b) The measures of overall model fit given by the size of the canonical correlations; and

(c) The redundancy measure of shared variance.

Table 4
Multivariate test of significance

Test Name	*Value*	*Approx. F*	*Hypoth. DF*	*Sig. of F*
Wilks' lambda	0.201	19.321	15	0.0000
Pillai's trace	1.574	16.878	15	0.0000
Lawley-Hotelling trace	2.390	20.984	15	0.0000
Roy's largest root	0.610			

Source: Authors own calculations

Table 4 shows the corresponding multivariate test of significance with 15 degrees of freedom. These test statistics are for the full model, which means they evaluate the shared variance between the predictor and criterion variables across all of the canonical functions. Nevertheless, by far the most common method used is the Wilk's Lambda (λ), as it tends to have most general applicability. However, all these test statistics in this case are statistically significant at 0.01 levels. Particularly, the Wilk's lambda takes a value 0.201 which is statistically significant at 1% level of significance. Accordingly, the null hypothesis that there is no relationship between the variables sets is rejected and it is concluded that there is probably a relationship.

The effect size of the full model can be judged through Wilk's lambda. Wilk's lambda represents something of an inverse effect size or the amount of variance not shared between the variable sets. Therefore, by taking $1 - \lambda$, the overall effect of the full model can be judged. In this case, $1 - \lambda$ is 0.799 which indicates that nearly 80% variance is shared between the variable sets. Therefore, the full model is both statistically significant and has a large effect size.

Table 5 shows the measures of overall model fit in the three canonical functions. The strength of the relationship between the canonical covariates is given by the canonical correlation. The squared canonical correlation is the simple square of the canonical correlation and represents the proportion of variance (i.e., variance accounted for effect size) shared by the two synthetic variables. The measures of overall model fit indicate that all the three canonical functions are statistically significant at 0.01 levels. However, the canonical R^2 for the first canonical function is 0.61 which indicates that the first canonical function is able to explain 61% variance shared by the two synthetic variables. The last two functions only explained 39.3% and 15.0% respectively, of the remaining variance in the variables sets after the extraction of the prior function. Therefore, the first canonical function is taken for further analysis and interpretation. As is observed from Table 10 the canonical correlation coefficient in respect of first canonical function is 0.781. This is statistically significant at 1% level of significance concluded that perceived strategic value and adoption of e-Commerce are highly correlated.

FINDINGS AND CONCLUSION

The research model taken in the study has two basic ingredients, i.e., perception of strategic value of e-Commerce and adoption of e-Commerce. Three major variables, i.e., organizational support, managerial productivity, and decision aids constitutes the perception of strategic value construct, whereas organizational readiness, compatibility, external pressure, ease of use and perceived usefulness constitute the adoption construct.

The difference in average scores for the eight variables under the two constructs across different demographic variables has been tested through analysis of variance. The results of ANOVA are as follows;

- The difference in average scores for all the variables in respect of male and female entrepreneurs' managers are statistically significant except for the variable 'external pressure'.

- There exists difference in the average scores assigned by managers / entrepreneurs with different years of presence in the present position except for the variable 'external pressure' and 'perceived usefulness'

- Average scores for all the variables under the two constructs across type of industry are not same and there exists a difference among them.

Canonical correlation analysis has been undertaken to find out nature of relationship between the two constructs and among the variables. The major findings of canonical correlation analysis are as follows;

- There exists a high relationship between the two constructs, i.e., perception of strategic value and adoption of e-Commerce (canonical correlation coefficient is greater than 0.75).

- External pressure (EP), organizational readiness (OR), ease of use (EU) and perceived usefulness (PU) are the primary criterion variables with compatibility (CC) making secondary contributions

to the synthetic criterion variable. Regarding the predictor variable, only organizational support (OS) is the primarily contributors to the predictor synthetic variable.

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