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ICT ADOPTION AND SME'S: A CONTEXTUAL FRAMEWORK

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Abstract:

The present paper is based on the objective of impact of ICT on small scale industrial units of India. An attempt to discuss the different challenges in the sector and overcoming them to make the small scale industries competitive through academic literature. SME's plays central role in the overall growth of the industrial economy of the country. SME's in India are known as the backbone of the economy. The reason behind is that these enterprises are employing about 40% of India's workforce and contributing 45% to India's manufacturing output, they play a significant role in generating millions of jobs, especially at the low-skill level. The country's 1.3 million SME account for 40% of India's total exports. The current scenario clearly states that the growth of our economy is impossible without the growth and development of these enterprises but these enterprises are far behind the large counterparts in the economy. The aim of this paper is to study how and why SMEs acquire or adopt ICT and the challenges surrounding the process.

Keywords:

Information and Communication Technology, Small Scale Industry, Manufacturing Industries.

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1. INTRODUCTION

In many developing countries, small and medium enterprises (SME's) account for a significant share of production and employment and are therefore directly connected to poverty alleviation. Especially in developing countries, SME's are challenged by the globalization of production and shift in the importance of the various determinants of competitiveness. Through the rapid spread of ICT and ever decreasing prices for communication, markets in different parts of the world have become more integrated. Whether the use of ICT can help them to cope with the new challenges is unclear. This study deals with the impact of ICT in SMEs and also focuses on generic barriers in adoption of the same. (Abdullah, 2014)

ICT adoption is an emerging topic of study in a number of areas including small scale industries. ICT can reduce production and labor costs, add value to products and services and increase company's competitive advantage (Corso et al., 2003). Some studies and reports have shown that

ICT is a means that could enhance the business process. Information and communication technologies are not just tool but these are techniques to be understood before any capital investment is made (Ballantine et al., 1998). Due to the uncertainty, misconception and inability, ICT adoption rate is very low in large no of small scale industries. Many studies indicate that there is large no of unsuccessful ICT implementation in small scale industries. Carson and Gilmore (2000) suggests that SME's specially new one's often have to face the problem of ambiguity and uncertainty when it comes to ICT adoption. Adoption of ICT is very important for the ongoing survival of Small Scale organization. ICT improves the ability of small scale organizations to compete with large scale organizations. ICT also enables the small scale firms to operate on an international scale.

The aim of this paper is to study how and why SMEs acquire or adopt ICT and the challenges surrounding the process.

2. INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

The term 'ICT' refers to a wide range of computerized information and communication technologies. These technologies include products and services such as desktop computers, laptops, handheld devices, wired or wireless Internet, business productivity software such as text editor and spreadsheets, enterprise software, data storage and security, network security and so on (Ashrafi & Murtaza, 2008). ICT is any technology that enables communication and the electronic capturing processing and transmission of information. Similarly, the parliamentary office of Science and Technology (2006) describes ICT as any technology that facilitates communication and assists in capturing, processing and transmission of information electronically. Wangwe (2007) refers to ICT as myriad of stand-alone media, that includes telephone and mobile telephony, radio, television, video, teletext, voice information systems and fax, as well as computer mediated networks that links a personal computer to the internet. ICT is an integrated system that incorporates the technology and infrastructure requires storing, manipulating, delivering and transmitting information. Adeosun et al. (2009) simply describe ICT as working with computers. ICT can be described as any tool that facilitates communication, process and transmit information and share knowledge through electronic means.

3. SMALL AND MEDIUM ENTERPRISES (SMES)

Indian SMEs represent the model of socio-economic policies of Government, which emphasis on the job creation at all levels of income stratum and diffusion of economic power in the hands of few thereby discouraging monopolistic practices of production and marketing and in all prospects contributing to growth of economy and foreign exchange earning with low import-intensive operations.

Indian SMEs also play a significant role in Nation development through high contribution to domestic production, significant export earnings, low investment requirements, operational flexibility, location wise mobility, low intensive imports, capacities to develop appropriate indigenous technology, import substitution, contribution towards defense production, technology oriented industries, competitiveness in domestic and export markets thereby generating new entrepreneurs by providing knowledge and training.

Despite their high enthusiasm and inherent capabilities to grow, SMEs in India are also facing a number of problems like sub-optimal scale of operation, technological obsolescence, supply chain inefficiencies, increasing domestic and global competition, fund shortages, change in manufacturing strategies and turbulent and uncertain market scenario. To survive with such issues and compete with large and global enterprises, SMEs need to adopt innovative approaches in their operations. SMEs that are innovative, inventive, international in their business outlook, have a strong technological base, competitive spirit and a willingness to restructure themselves can withstand the present challenges and come out successfully to contribute 22% to GDP.

Definition of SMEs in India

Manufacturing Enterprises			Service enterprises	
Investment in plant and machinery excluding land and building			Investment in equipment excluding land building furniture and other items not directly related to service	
Description	INR	USD(\$)	INR	USD(\$)
Micro Enterprises	upto Rs. 25 Lakh	upto \$ 62,500	upto Rs. 10 Lakh	upto \$ 25,000
Small Enterprises	above Rs. 25 Lakh & upto Rs. 5 Crore	above \$ 62,500 & upto \$ 1.25 million	above Rs. 10 Lakh & upto Rs. 2 Crore	above \$ 25,000 & upto \$ 0.5 million
Medium Enterprises	above Rs. 5 Crore & upto Rs. 10 Crore	above \$ 1.25 million & upto \$ 2.5 million	above Rs. 2 Crore & upto Rs. 5 Crore	above \$ 0.5 million & upto \$ 1.5 million

(Source: Retrieved from http://www.smechamberofindia.com/About_MSMEs.aspx)

4. LITERATURE REVIEW

S.No.	Author	Title	Country	Year	Findings
1	Aleke et al.	ICT adoption in developing countries: perspectives from small-scale agribusinesses	South Nigeria	2011	A willingness of indigenous ICT users is particularly influenced by the recognition and incorporation of visible social imperatives during the adoption process.
2	Martin et al	No gender in cyberspace? Empowering entrepreneurship	Birmingham (UK)	2005	ICT provide new opportunities for women to start e-business.

		&innovation in female-run ICT small firms			
3	Yang et al.	Adoption of ICT technology Impact of technology types, organization resources and management style	Florida (USA)	2007	There are significant differences between early and late adoption organizations with regard to management characteristics. However, no significant differences were found in organization resource or corporate strategy factors
4	Sharma et al.	Analyzing the technical and scale efficiency of small industries in India: state-wise cluster study	India	2010	Seven states namely, Delhi, Meghalaya, Uttranchal, Haryana, Punjab, Andaman and Nicobar and Tamilnadu are found to be technically efficient whereas Delhi and Meghalaya came out to be the only scale efficient states.
5	Pokharel	Perception on information and communication technology perspectives in logistics A study of transportation and warehouses sectors in Singapore	Singapore	2005	Use of ICT in Singapore is perceived positively with the increase in size of a company but is indifferent regarding the type of industry covered and the type of service offered by the logistics companies.
6	Ashrafi et al	Achieving Business Success Through Information and Communication Technologies Adoption by Small and Medium Enterprises in Oman	Oman	2014	The current status of ICT usage and impact of company size on the adoption ICT by SMEs in OMAN followed by identification and ranking of key drivers to achieve business through ICT adoption by SMEs in OMAN.
7	Adebayo	An Investigative Study Of The Factors Affecting The Adoption Of Information And	Nigeria	2013	Cost of purchasing of computer equipment, infrastructure, skills and training, accessibility to

		Communication Technology In Small And Medium Scale Enterprises			funds, management and government support were jointly predict the ICT adoption in SMEs
8	Brakel	E-readiness of SMEs in the ICT sector in Botswana with respect to information access	Botswana	2006	Most developing Countries, had not achieved a reasonable measure of e-readiness status compared to the developed world.
9	Eze et al.	Examining emerging ICT's adoption in SMEs from a dynamic process approach	UK	2014	Dynamic nature of the emerging ICT adoption process and the constant interactions and negotiations of various actors
10	Moriones et al	Perceived performance effects of ICT in manufacturing SMEs	Spanish	2013	Positive relationship between ICT adoption and all the measures of perceived performance analyzed, although the impact is not always immediate since the lag effects and length differ according to the type of ICT
11	Van et al.	Factors affecting entry-level internet technology adoption by small business in Australia - evidence from three cases	Australia	1999	Australian small business is relatively slow in adopting these technologies, particularly when compared with small business in other, comparable economies
12	Chuang et al.	An exploratory study of the extent of information technology adoption in SMEs: an application of upper echelon theory	USA	2009	Age average and the education average of TMT (top management team in small businesses are significant predictors of the extent of IT adoption. However, the group heterogeneity (either gender or ethnicity), Contrary to the prediction, has negative impact on the extent of IT adoption.

13	Nguyen et al.	Information technology adoption in SMEs: an integrated framework	UK	2009	The majority of the changes result from pressures from both internal and external sources. In addition to these drivers, there are factors that influence the process either directly or indirectly
14	Apulu et al.	Factors affecting the effective utilization and adoption of sophisticated ICT solutions	Nigeria	2011	Eight key factors that affect the effective utilization and adoption of more sophisticated or advanced ICT solutions in Nigerian SMEs..
15	Koning et al.	ICT and older workers: no unwrinkled relationship	Dutch	2006	Compared with younger workers, older workers make less use of ICT in their job, use less complicated applications and have more difficulties in using ICT
16	Birchall et al.	The impact of ICT on the work patterns of managers and their organizations	UK	2008	Many of the respondents appeared equipped to work “any place, any time”. However, it also highlighted the challenges managers face in working in a connected operation
17	Tan et al.	Internet-based ICT adoption: evidence from Malaysian SMEs	Malaysia	2009	Internet-based ICT adoption provides a low cost yet effective communication tool for customers. However, security continues to be a major barrier
18	Kyobe	Investigating the key factors influencing ICT adoption in South Africa	Souh Africa	2011	ICT has the most significant influence on ICT adoption in South Africa, followed by exposure to international environment. The effect of state policies was surprisingly not

					significant, deviating from the general claims that policy implementation and adoption of such policies are key determinants of adoption.
19	Wolcott et al.	Meeting the challenges of ICT adoption by microenterprises	Omaha	2008	Individualized technology-related assistance, with an emphasis on relationship-building, customized training, context sensitivity, and solutions that target strongly-perceived needs of the businesses studied
20	Spinelli et al.	IT readiness in small firms	Italy	2013	Valid with the emergence of three constructs: strategic vision; project management capability; and IT application infrastructure. The data analysis yielded four distinctive and varying profiles of small business owners
21	Nguyen et al.	Understanding customer relationship management (CRM) technology adoption in small and medium-sized enterprises",	USA	2014	Management characteristics significantly influence a firm's perception of CRM technology specifically innovativeness and positive attitude to CRM.
22	Iyanda et al.	Motivation, influences, and perceived effect of ICT adoption in Botswana organizations	Botswana	2008	Competitive motive and internal sources of information and influence were dominant and that the overall effect of ICT adoption on several organizational activities was moderately positive.

Challenges to ICT adoption By SMEs

Capabilities	Resources	Access	Attitude	Context	operations
<ul style="list-style-type: none"> •Inadequate IT user Skills •Poor Trouble shooting Skills •Inadequate IT development capabilities •Limited IT planning capabilities •Lack of IT knowledge 	<ul style="list-style-type: none"> •Lack of Money •Lack of Time <ul style="list-style-type: none"> •Lack of Information 	<ul style="list-style-type: none"> •Inadequate Hardware and Software •Poor IT infrastructure 	<ul style="list-style-type: none"> •Resistance to technology <ul style="list-style-type: none"> •Lack of engagement of management •Lack of Value and personal incentives <ul style="list-style-type: none"> •Lack of confidence •Lack of awareness •Lack of trust 	<ul style="list-style-type: none"> •Cultural Factors •Mismatch between technology and social/business systems 	<ul style="list-style-type: none"> •Lack of operational support and administration •Inappropriate operational procedures

Source: Wolcott et al. (2008)

5. NEED OF THE STUDY

This research is very important as it will emphasize on the relationship between ICT and the performance of small scale industries. It will also highlight if ICT has a greater influence on a company's productivity. It is very important for the students to know how far ICT is used especially in manufacturing sector of small scale industries as ICT students learn a lot about the application of ICT in industry. In view of the benefits and opportunities offered by ICTs, it is acknowledged that small scale industries cannot effectively forge ahead with their economic agenda without putting in place an appropriate framework of information and communication technology.

6. FINDINGS AND CONCLUSION

To summarize we can draw into conclusion that Information and Communication Technology change the work style of Organizations as well as increased the efficiency and employees performance another most important thing which the existing literature related to ICT adoption in SME's revealed that in Indian studies conducted on ICT adoption are limited in scope. So far no study has analyzed the important factor of ICT adoption or impact of ICT on SMEs especially in North India region. The extent of ICT adoption in small scale industries in this region has also not been assessed. From the existing literature review following recommendations are suggested:

- Enhancement in the Information and Communication Technology is very important in order to improve the performance of employees in the organization in terms of speed, quality and quantity of work achievement.
- Information and Communication Technology culture should be encouraged and exhilarated in the organization through articulating training program with regard to technology.

7. REFERENCES

- [1] Aleke, B., Ojiako, U., & Wainwright, W. D. (2011). *ICT adoption in developing countries: perspectives from small-scale agribusiness*. *Journal of Enterprise Information Management*, 24 (1), 68-84.
- [2] Bayo-moriones, A., Billon, M., & Lera-Lopez, F. (2013). *Perceived performance effects of ICT in manufacturing SMEs*. *Industrial Management and Data Systems*, 113(1), 117-135.
- [3] Kyobe, M. (2011). *Investigating the key factors influencing ICT adoption in South Africa*. *Journal of System and Information Technology*, 13(3), 255-267.
- [4] Awa, O., Emecheta, C. B., & Ukoha. O. (2014). *Location factors as Moderators between some critical demographic characteristics and ICT adoption: A study of SMEs*. *Proceedings of Informing Science and IT Education Conference*, 39-52.
- [5] Ashrafi, R., Sharma, K. S., Al-Badi., H. Ali. (2014). *Achieving Business Success Through Information and Communication Technologies Adoption by Small and Medium Enterprises in Oman*. *Middle-East Journal of Scientific Research*, 22(1), 138-146.
- [6] Fuad, N., Bohari, M., & Abdul (2011). *Malay Women Entrepreneurs in the Small and Medium Sized ICT-Related Business: A study on Need for Achievement*. *International Journal of Business and Social Science*, 2 (13).
- [7] Gilaninia, S., Mousavian, J.S., Omidvari, N., & Bakshalipour, A. (2012). *The Role of ICT in Performance of Small and Medium Enterprises*. *Interdisciplinary Journal of Contemporary Research in Business*, 3(9).
- [8] Martin, M. L., & Wright, T. L. (2005). *No gender in cyberspace? Empowering entrepreneurship and innovation in female-run ICT small firms*. *International Journal of Entrepreneurial Behaviour and research*, 11(2), 162-178.
- [9] Apulu, I., Latham, A., & Moreton, R. (2011). *Factor affecting the effective utilization and adoption of sophisticated ICT solutions*. *Journal of Systems and Information Technology*, 13(2), 125-143.
- [10] Mouelhi, R. (2009). *Impact of the adoption of information and communication technologies on firm efficiency in the Tunisian manufacturing sector*. *Economic Modeling*, 26, 961-967.
- [11] Gono, S., Harindranath, G., & Ozcan. B. G. (2013). *Challenges of ICT adoption by South African SMEs: A study of Manufacturing and Logistics Firms*. Retrieved from www.isbe.org.uk/content/assets/ICT-_Sinfree_Gono.pdf. Accessed on 05th March, 2015.
- [12] Adebayo, O.S., Balogun, O. J., & Kareem, T. S. (2012). *An investigative study of the factors affecting the adoption of information and communication technology in small and medium scale enterprises in Oyo state, Nigeria*. *International Journal of Business and Management Invention*, 2(9), 13-18.

- [13] Van, K. J., & Cavaye, M. A. (1999). *Factor affecting entry level internet technology adoption by small business in Australia-evidence from three cases*. *Journal of Systems and Information Technology*, 3(2), 33-48.
- [14] Abdul, A. & Tijani, A. (2012). *An investigative study of the factors affecting the adoption of information and communication technology in small and medium scale enterprises in Nigeria*. *Australian Journal of Business and Management Research*, 2 (2), 1-9.
- [15] Koning, D. J., & Gelderblom, A. (2006). *ICT and OLD workers: no unwrinkled relationship*. *International Journal of Manpower*, 27 (5), 467-490.
- [16] Caldeira, M., & Ward M. J. (2002). *Understanding the successful adoption and use of IS/IT in SMEs: an explanation from Portuguese manufacturing industries*. *Journal of information system*, 12, 121-152.
- [17] Pokharel, S. (2005). *Perception on information and communication technology perspectives in logistics*. *Journal of Enterprise Information Management*, 18 (2), 136-149.
- [18] Yang, H. K., Lee, M. S., & Lee, S. L. (2007). *Adoption of information and communication technology*. *Industrial Management and Data System*, 107(9), 1257-1275.
- [19] Spinelli, R., Harindranath, G. R., & Dyerson (2013). *IT readiness in small firms*. *Journal of small business and enterprise development*, 20 (4), 807-823.
- [20] Sharma, S., & Sharma, M (2010). *Analyzing the technical and scale efficiency of small industries in India: state wise cluster study*. *Measuring business excellence*, 14 (2), 54-65.
- [21] Chowdhury, K., & Shyamlal (2006). *Investments in ICT-Capital and Economic Performance of Small and Medium Scale Enterprises in East Africa*. *Journal of International Development*, 18, 533-552.
- [22] Tan, S. K., Chong, C. S., Lin, B., & Eze, C. U. (2009). *Internet based ICT adoption: evidence from Malaysian SMEs*. *Industrial Management and Data Systems*, 109(2), 224-244.
- [23] Birchall, W. D., Giambona, G. (2008). *The impact of ICT on the work patterns of managers and their organizations*. *Euro med Journal of Business*, 3 (3), 244-262.
- [24] Eze, C. S., Duan, Y., & Chen, H. (2014). *Examining emerging ICT's adoption in SMEs from a dynamic process approach*. 27(1), 63-82.
- [25] Newby, M., Nguyen, H. T., & Waring, S. T (2014). *Understanding customer relationship management technology adoption in small and medium-sized enterprises*. *Journal of Enterprise Information management*, 27 (5), 541-560.
- [26] Spanos, E. Y., Prastacos, P. G., & Poulymenakou, A (2001). *The relationship between information and communication technologies adoption and management*. *Information and Management*, 39, 659-675.
- [27] Shiels, H., Mclvor, R., & O'Reilly, D. (2003). *Understanding the implications of ICT adoption: insights from SMEs*. *Logistics information Management*, 16 (5), 312-326.
- [28] Wolcott, P., Kamal, M., & Qureshi, S. (2008). *Meeting the challenges of ICT adoption by micro-enterprises*. *Journal of Enterprise Information Management*, 21 (6), 616-632.
- [29] Mutula, M., & Stephen B., (2006). *E-readiness of SMEs in the ICT sector in Botswana with respect to information access*. *The electronic library*, 24 (3), 402-417.
- [30] Lyanda, O., & Ojo, O. S (2008). *Motivation, influences and perceived effects of ICT adoption in Botswana organization*. *International Journal of Emerging Markets*, 3 (3), 311-322.

- [31] Andersen, J. T., & Segars, H. A. (2001), *The impact of IT on decision structure and firm performance: evidence from the textile and apparel industry*. *Information and Management*, vol. 39, 85-100.
- [32] Chuang, T. T., Nakatani, K., & Zhou, D(2009). *An exploratory study of the extent of information technology adoption in SMEs: an application of upper echelon theory*. *Journal of Enterprise information management* 22 (1/2), 183-196.