



## A study of barriers and benefits of ICT adoption among SMEs

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### Abstract

**Purpose:** The objective of the study is to explore the factors preventing adoption of ICT in SMEs and discuss the benefits due to ICT adoption by SMEs.

**Research Methodology:** The intensive literature is reviewed to know the factors preventing ICT and benefits due to adoption of ICT in SMEs. The secondary data is collected from sources like research journal, books, thesis, reports, working paper etc.

**Finding of the Study:** The undertaken study found that awareness of ICT, Cost of the ICT and ICT infrastructures are preventing factors of ICT adoption in SMEs & benefits due to ICT adoption are increase in productivity, enhancement in buyer and seller relationship and improvement among internal as well as external stake holders.

**Practical Implication:** This study may help SMEs to understand the importance of ICT adoption and to know factors which prevent them from use of ICT. SMEs may formulate strategy to minimize preventing factors of ICT and maximize the benefits from ICT adoption.

**Keywords:** ICT, SMEs, preventing factors ICT, benefits of ICT, and competitive advantage

### Introduction

Information and communication technology is one of the important segments of industry. The application of ICT tools gives various kinds of benefits to small and medium enterprises. The study focuses on barriers to ICT adoptions and kind of benefit ICT gives to SMEs. The study conducted by Rahayu & Day (2017) <sup>[36]</sup>; Yunis *et al.*, (2017) <sup>[44]</sup> concluded that the adoption of information and communication tools in small and medium enterprises is playing significant role in socioeconomic development of an economy of the country, specifically in developing countries of the worlds. The research study carried out by Premkumar (2003) <sup>[34]</sup> concluded that adoption of IT offers various kinds of benefits and business opportunities. Nowadays, small and medium enterprises are trying to strengthen their position in industry and improvement in productivity. The cost of IT factors influencing the adoption of ICT in SMEs. The managers or decision makers are considering the cost of IT tools while implementing ICT in SMEs. According to study of Walczuch *et al.*, (2000) <sup>[40]</sup> high costing of ICT is one of the major factor which prevent small firms in Netherland from adoption of ICT and the because of high costing the Dutch companies are not having internet accessibility to their own websites.

According to study of Ollo-Lopez and Aramendia-Muneta (2012) <sup>[28]</sup> ICT adoption is positively influencing productivity of SMEs, and has a huge potential for sustainable development. The study conducted by Manochehri *et al.*, (2012) <sup>[22]</sup> argued that the adoption of ICT likes e-commerce, e-mail, and social media are significantly cutting down the costs and efforts of physical movement of goods and services by SMEs. The adoptions of ICT by SMEs are reducing the cost of purchasing, advertising, sales and distribution, banking and financial services. The study conducted by Apulu and Latham concluded that ICT adoption

helps customer to give immediate feedback about product or service offered that allow firms to respond to customers' demand. Thus, the ICT brings suitable changes in organizations and making them more innovative and competitive and enabling them to achieve organizational growth. The study carried out by Consoli (2012) <sup>[9]</sup> argued that the ICT influence on organizations have been identified and categorized into four major dimensions: performance, expansion, growth and new product development. Each dimension again divided into several other dimensions, such as efficiency and productivity. There are barriers to ICT adoption in SMEs. However, organizations are trying to minimize the weakness and maximize the strengths of the organizations. These strengths are giving competitive advantage to SMEs in cost leadership and differentiation in product and service offering. SMEs are getting several benefits due to adoption of ICT.

### Review of Literature

The ICT is playing very crucial role in development of SME sector. SME sector is one of the major contributors in Indian economy. The study is undertaken to understand the various facets of perceived benefits and factors preventing the use of ICT in SMEs. The study conducted by Arendt (2008) <sup>[4]</sup> argues that the major reason of ICT barriers in effective and efficient adoption of ICT in SMEs are lack of knowledge level, type of education and quality of skill level of internal stakeholders like, promoter, CEO, Owner, managers and employees. The study carried out by Parida (2010) <sup>[29]</sup> argued that the perception of business owner had major impact on the role of ICT in SMEs. If the owner is not conversant or familiar with ICT, he carries very traditional belief that ICTs are for only big size organization.

They repeatedly failed to recognize the worth of ICT to their company. The ICT unsuitability to type of business is one of the barriers to ICT adoption. According to study of Love *et al.*, (2001) [21] construction and small retail firms felt that internet and e commerce ICT tools are not suitable for their business. The study conducted by Modimogale & Kroeze (2011) [24] found that lack of ICT skill is one of the major problem faced in Africa. The South African Government has set up Skills Education Training Authority (SETA) to enhance and improve the ICT skills of the major stake holders. The study conducted by Morawczynski & Ngwenyama (2007) [26] concluded that everyone thinks that ICT will surely give benefits to SMEs, but the environment in which ICT adopted are not same. The socio economic and technological factors are influencing the adoption of ICT.

The ICT is playing very significant role in various processes and functions of business management. ICT is benefiting SMEs in improvement and enhancement of business processes. The study conducted by Brady *et al.*, (2002) [7] concluded that ICT is helping SMEs in enhancing the productivity and effectiveness of various functional areas. The study carried out by Corbitt (2000) [10]; Javalgi & Ramsey (2001) [16] argued that ICT is playing significant role in access to market and creation of new business model. The ICT is enabling SMEs to grow in a market. The study conducted by Moodley (2002) [25] found that internet based ICT tools are reducing various kinds of information lacunas between buyer and seller. This minimization of information, gap results in building a close relationship between various stakeholders. The study conducted by Jones *et al.*, (2014) [17]; Rahayu and Day (2017) [36] and Tarute & Gatautis (2014) found that the ICT adoption enabled SMEs in becoming more efficient, effective, innovative and globally recognized. The study carried out by Agwu & Murray (2015) argued that the application of ICT by SMEs make them competitive like large organization. ICT is enhancing the effectiveness and efficiency of various processes and functions of SMEs. According to study of Niebel (2018) [27]; Rahayu & Day (2017) [36] adoption of ICT in large and SMEs in developed countries has significantly increased from 2005.

### Objectives of the Study

1. To explore the factors preventing ICT adoption in SMEs.
2. To discuss the benefits of ICT adoption in SMEs.

### Research Methodology

The research study is based on secondary source of data. The secondary source of data is collected through various sources like research journal, Government report, conference proceedings, thesis, books etc.

### Factors Preventing Adoption of ICT in SMEs

The large organizations have adequate resources to adopt ICT but SMEs are not having sufficient resources to adopt or implement ICT effectively and efficiently. There are certain parameters which are preventing SMEs from ICT adoption.

### Awareness about ICT

Awareness about ICT by various stakeholders of SMEs is playing very significant role in successfully adoption of ICT and getting benefit due to ICT adoption. Various research studies have shared their research findings on this concerned topic. The awareness about ICT by owner, manager, employee, customer, supplier, etc

very important to SMEs. The study conducted by Yeung *et al.*, (2003) [43] and Pires and Aisbett (2001) [32] argued that expensive ICT tools, risk and security concern, lack of technical expertise and customer relationship are the major reasons of ICT adoption in SMEs. The study carried out by Windrum *et al.*, (2003) [41] concluded that ICT knowledge of owner/CEO is significant in ICT adoption by SMEs. The level of ICT awareness by decision makers decided the success or failure of ICT adoption in SMEs. According to study of Allison (1999) [2] skill, competency and knowledge of employees is very important and playing significant role is successful adoption of Technology in organization.

### Cost of the ICT

Small and medium enterprises are having very low spending capacity. They are not in position to take fast decision making of buying of ICT for firm. The study carried out by Dixon *et al.*, (2002) [12] argued that ICT adoption by SMEs is highly depend on the costing of ICT. The cost of the ICT is highly influencing the rate of adoption of ICT by SMEs. Levy *et al.*, (2002) [20] argue that technology becomes more affordable but still this huge investment for SMEs and there is no such provision of funds in budget. The study carried out by Craig & Annear (2003) [11] revealed that adoption of ICT required certain changes in business processes. Such changes are crucial for business. If these changes are not handled properly, there are chances of losses to small firms and such risk of losing of finance is one of the fears to SME regarding ICT adoption. Gemino *et al.*, (2006) [14] revealed that SMEs are avoiding ICT adoption because of fear of failure and financial losses.

### ICT infrastructure

The availability of ICT infrastructure is one of the significant factors for SMEs. The SMEs can be benefitted from this ICT infrastructure but the absence of ICT infrastructure creates several problems. The study conducted by Modimogale & Kroeze (2011) [24] found that due to lack of infrastructure access to information is one of the significant problem form SMEs. Access to easy information is assisting SMEs to take prompt decision over adoption of ICT. The rural areas are underdeveloped, need to work on development of infrastructure like electricity, telephone lines etc. The study carried out by Wolf (2001) [42] found that South African SMEs are facing problems with respect to poor or limited access to technology and ICT infrastructural facilities. According to Lal (2007) poor physical infrastructure is one of the major barriers in successful ICT adoption by SMEs.

### Benefits Due to ICT Adoption in SMEs

The study of carried out by Udo & Edoho (2000) [39] argue that adoption of ICT gives benefits to almost all sectors of economy and can do the improvement in living standard of individuals, enhancement in various business processes and improve organizational productivity and efficiency.

### Improvement in Productivity

The study conducted by Barba-Sanchez *et al.* (2007) concluded that adoptions of ICT gives benefits like reduction in cost of various processes and functions of business, improvement in productivity of the internal stakeholders and enhancement in

possibilities of growth in business. The study carried out by Shiels *et al* (2001) found that organizations can have a growth in business by aligning it with various business strategies. This means firms need to have right technology at right and suitable place would assist in improvement of productivity.

### Improvement in buyer and seller relation

The buyers and sellers are the integral part of marketing function. ICT adoption is enabling firms in creating demand for product and service as well as sales and distribution of the product to end user. The study conducted by Pine *et al.*, (1995)<sup>[31]</sup>; Prasad *et al.*, (2001)<sup>[33]</sup> concluded that ICT enable marketer to target particular segment of customer by using various marketing communications tools. ICT adoption is helping marketer to improve and enhance the relationship between firm and consumers. ICT is assisting firms in targeting, segmentation and positioning of product and services and gives competitive advantage. The study carried out by Leenders & Wierenga (2002)<sup>[19]</sup>. Rothwell (1994)<sup>[37]</sup> argue that ICT adoption is enabling in creating new and strong linkages between internal processes and functions of the business. These activities are directly or indirectly concern with consumer and suppliers of the business.

### Improvement in communication of Stakeholders

ICT adoption is enabling SMEs to improve the communication between internal as well as external stakeholders of the business. This improved communication among stakeholders is giving competitive advantage to SMEs. The study carried out by Brynjolfsson & Hitt (2000)<sup>[8]</sup> revealed that ICT adoption is enabling various management functions such as reduction in cost of coordination, processing of information at lowest or minimum cost, offering services at affordable price and modes of communication are fast and reduced cost. The study carried out by Ion and Andreea (2008)<sup>[15]</sup> found that the ICT adoption by SMEs enables to improve communication ability to exchange information, coordination among team members, and enhancement in customer services and increase in market share and so on. It allows organization to collect, process, stored and exchange information. The study carried out by Bhalerao, K. & Patil, V. (2021)<sup>[5]</sup> concluded that adoption of Social media tools, e-commerce and m-commerce Applications and Industry 4.0 technologies are benefitting SMEs in gaining competitive advantage and sustain in a market.

### Conclusion

The undertaken study concluded that ICT adoption is facing problems and offer certain benefits to SMEs. The preventing factors like lack of physical infrastructure, high initial and maintenance cost of ICT and low ICT awareness among decision makers are preventing ICT adoption. The adoption of ICT among SMEs is offering various kinds of benefits like increase in productivity, enhancement in customer & supplier relationship management and improvement in communication among internal as well as external stakeholders of the SMEs. Though there are barriers to ICT adoption but the ICT is the future of SMEs and industry at large.

### References

1. Agwu EM, Murray PJ. Empirical study of barriers to electronic commerce uptake by SMEs in developing

- economies, *International Journal of Innovation in the Digital Economy*, 2015;6(2):1-19. doi: 10.4018/ijide.2015040101.
2. Allison IK. Information systems professionals' development: A work-based learning model. *Journal of Continuing Professional Development*, 1999;2(3):86-92.
  3. Apulu I, Latham A. Benefits of information and communication technology in small and medium sized enterprises: a case study of a Nigerian SME, 2010.
  4. Arendt L. Barriers to ICT adoption in SMEs: how to bridge the digital divide? *Journal of System and Information Technology*, 2008;10(2):93-108. <https://doi.org/10.1108/13287260810897738>.
  5. Bhalerao K, Patil V. Information and Communication Technology Adoption in Small and Medium Enterprises: Post COVID-19 Mantra of Success. *International Journal of Management and Commerce*, 2021;3(1):27-31.
  6. Barba-Sánchez, Virginia, Martínez-Ruiz, María Pilar, Jiménez-Zarco, Ana. Drivers, Benefits and Challenges of ICT Adoption by Small and Medium Sized Enterprises (SMEs): A Literature Review. *Problems & Perspectives in Management*, 2007;5:104-115.
  7. Brady M, Saren M, Tzokas N. Integrating Information Technology into Marketing Practice – The IT Realize of Contemporary Marketing Practice. *Journal of Marketing Management*, 2002;18:555-577.
  8. Brynjolfsson E, Hitt L. Beyond Computation: Information Technology, Organizational Transformation and Business Performance. *Journal of Economic Perspectives*, 2000 14. 10.1257/jep.14.4.23.
  9. Consoli D. Literature Analysis on Determinant Factors and the Impact of ICT in SMEs. *Procedia-Social and Behavioral Sciences*, 2012;62:93-97.
  10. Corbitt BJ. Developing intraorganizational electronic commerce strategy: an ethnographic study. *Journal of Information Technology*, 2000;15(2):119-130.
  11. Craig A, Annear J. A framework for the adoption of ICT and security technologies by SMEs. In 16th Conference Small Enterprise Association of Australia, Ballarat, 2003.
  12. Dixon T, Thompson B, McAllister P. The value of ICT for SMEs in the UK: a critical literature review, Report for Small Business Service research programme, The College of Estate Management, 2002. [Online] Available: [www.sbs.gov.uk/SBS\\_Gov\\_files/researchandstats/value\\_of\\_ICT\\_for\\_SMEs\\_UK.pdf](http://www.sbs.gov.uk/SBS_Gov_files/researchandstats/value_of_ICT_for_SMEs_UK.pdf).
  13. Fink D. Guidelines for the Successful Adoption of Information Technology in Small and Medium Enterprises. *International Journal of Information Management*, 1998;18:243-253.
  14. Gemino A, Mackay N, Reich B. Executive Decision about ICT Adoption in SMEs. *Journal of Information Technology Management*, 2006;17(1):35-50.
  15. Ion P, Andreea Z. Use of ICT in SMEs management within the sector of services. *Annals of Faculty of Economics*, 2008;4:481-487.
  16. Javalgi R, Ramsey R. Strategic issues of e-commerce as an alternative global distributions system. *International Marketing Review*, 2001;18(4):376-391.
  17. Jones P, Simmons G, Packham G, Beynon Davies P, Pickernell D. An exploration of the attitudes and strategic responses of sole-proprietor micro-enterprises in adopting

- ICT. *International Small Business Journal*,2014:32(3):285-306. doi: 10.1177/0266242612461802.
18. Lal, Kaushalesh. Globalisation and the adoption of ICTs in Nigerian SMEs. *Science Technology & Society*,2007:12:217-244. 10.1177/097172180701200203.
  19. Leenders M, Wierenga B. The Effectiveness of Different Mechanisms for Integrating Marketing and R&D. *Journal of Product Innovation Management*,2002:19(4):305-317.
  20. Levy M, Powell P, Yetton P. The Dynamics of SMEs Information Systems. *Small Business Economics*,2002:19(4):341-354.
  21. Love PED, Irani Z, Li H, Cheng EWL, Tse RYC. An empirical analysis of the barriers to implementing e:commerce in small:medium sized construction contractors in the state of Victoria, Australia. *Construction Innovation*,2001:1(1):1-41.
  22. Manochehri N, Al-Esmail R, Ashrafi R. Examining the Impact of Information and Communication Technologies (ICT) on Enterprise Practices: A Preliminary Perspective from Qatar. *The Electronic Journal of Information Systems in Developing Countries*,2012:51(3):1-16.
  23. Modimogale L, Kroeze J. The Role of ICT within Small and Medium Enterprises in Gauteng. *Communications of The IbIMA*, 2011, 1-9.
  24. Modimogale L, Kroeze JH. The Role of ICT within Small and Medium Enterprises in Gauteng. *Communications of the IBIMA*, 2011, 1-13.
  25. Moodley S. E-Business in the South African Apparel Sector: a Utopian Vision of Efficiency? *The Developing Economics*,2002:11(1):67-100.
  26. Morawczynski O, Ngwenyama O. Unraveling the Impact of Investments in ICT, Education and Health on Development: An Analysis of Archival Data of Five West African Countries Using Regression Splines. *The Electronic Journal of Information Systems in Developing Countries*,2007:29(5):1-15.
  27. Niebel T. ICT and economic growth – Comparing developing, emerging and developed countries. *World Development*,2018:104:197-211, doi: 10.1016/j.worlddev.2017.11.024.
  28. Ollo-López A, Aramendía-Muneta ME. ICT Impact on Competitiveness, Innovation and Environment. *Telematics and Informatics*,2012:29(2):204-210.
  29. Parida V. Achieving competitiveness through externally oriented capabilities: An empirical study of technology: based small firms, Doctoral Thesis, Lulea University of Technology, 2010.
  30. Papke-Shields K, Malhotra MK. Assessing the impact of the manufacturing executive's role on business performance through strategic alignment. *Journal of Operations Management*,2001:19(1):5-22.
  31. Pine B, Pippers D, Rogers M. Do you Want to Keep your Customers for Ever?. *Harvard Business Review*,1995:73(2):103-119.
  32. Pires GD, Aisbett J. A dual Marketing and Informational Perspective to E-Commerce Adoption. *The Newcastle University Research Publications*, 2001.
  33. Prasad V, Ramamurthy K, Naidu G. The Influence of Internet-Marketing Integration on Marketing Competencies and Export Performance. *Journal of International Marketing*,2001:9(4):82-110.
  34. Premkumar G. A meta-analysis of research on information technology implementation in small business. *Journal of Organizational Computing and Electronic Commerce*,2003:13(2):91-121.
  35. Rahayu R, Day J. Determinant factors of e-commerce adoption by SMEs in developing country: evidence from Indonesia. *Procedia - Social and Behavioral Sciences*, 2015:195:142-150, doi: 10.1016/j.sbspro.2015.06.423.
  36. Rahayu R, Day J. E-commerce adoption by SMEs in developing countries: evidence from Indonesia. *Eurasian Business Review*,2017:7(1):25-41. doi: 10.1007/s40821-016-0044-6.
  37. Rothwell R. Towards the Fifth-Generation Innovation Process. *International Marketing Review*,1994:11(1):7-31.
  38. Tarutè A, Gatautis R. ICT impact on SMEs performance. *Procedia - Social and Behavioral Sciences*,2014:110:1218-1225, doi: 10.1016/j.sbspro.2013.12.968.
  39. Udo, Godwin, Edoho, Felix. Information Technology Transfer to African Nations: An Economic Development Mandate. *The Journal of Technology Transfer*,2000:25:329-42. 10.1023/A:1007886908690.
  40. Walczuch R, Van Braven G, Lundgren H. Internet adoption barriers for small firms in the Netherlands. *European Management Journal*,2000:18(5):561-572.
  41. Windrum, Paul, Grout, Paul, Berranger, Pascale. Factors affecting the adoption of intranets and extranets by SMEs: a UK study, 2003.
  42. Wolf. Determinants and Impact of ICT use for African SMEs: Implications for Rural South Africa. *Center for Development Research (ZEF Bonn)*, 2001, 1-24.
  43. Yeung MA, Shim JP, Lai AYK. Factor Affecting E-Commerce Adoption: An empirical Evidence. *Communication of the ACM*, 2003, 46(9).'
  44. Yunis M, El-Kassar A, Tarhini A. Impact of ICT-based innovations on organizational performance: the role of corporate entrepreneurship. *Journal of Enterprise Information Management*,2017:30(1):122-141.