

Impact of ICT Adoption on Productivity of Indian SME's 'A Study of Ghaziabad- UP'

Dr. Mani Tyagi¹, Associate Professor, KIET Group of Institutions, Ghaziabad

Dr. Ranchay Bhateja², Associate Professor, KIET Group of Institutions, Ghaziabad

Dr. Amit Tyagi³, Associate Professor Centre for Management Development, Modinagar

Article Info

Volume 83

Page Number: 2973 - 2982

Publication Issue:

May - June 2020

Abstract:

Purpose of the study: The objective of this paper is to publish the results of research work done to study the impact of ICT on Small and Medium Enterprises (SME's) in Ghaziabad district of Uttar Pradesh. The study was conducted to find out the increase in productivity of SME's due to the implementation of ICT. Also it was studied whether internet contributed additionally in the expansion of the SME market.

Methodology: The data was collected from 80 SME's of Ghaziabad through questionnaire as the research instrument. Both qualitative and quantitative method was used in analysing the data

Major findings: The result analysis shows that only small number of firms in Ghaziabad is getting benefits through ICT. Many are using internet for local mailing. The customers are mainly using internet for leisure and connecting on social media rather professional growth. Poor infrastructure for internet, lack of financial aids and many personal reasons were the main reasons for non adopting ICT in business. The result also focussed that availability of training facilities, non affordable cost of using ICT products and services, consultation and free professional advice can improve the business.

Practical Implications and values: By using ICT by SME's new options can be opened, inventories can be reduced and services can be made flexible and tradable. The paper made pioneering effort to analyze the role of ICT as it may play an icebreaking role towards development of the country's economy.

Scope: The study was conducted on SME's on the basis of their performance w.r.t productivity and profits in Ghaziabad only. However Ghaziabad was selected as it's in NCR and many Small and Medium enterprises are concentrated here. This study can be promoted to various other districts of Uttar Pradesh and other states as well.

Keywords: ICT, SME, Increase in Productivity, Internet, Social Media.

Article History

Article Received: 11 August 2019

Revised: 18 November 2019

Accepted: 23 January 2020

Publication: 10 May 2020

INTRODUCTION:

In this era of 21st century, where globalization is the main competitive factor in all over world, SME plays a vital role in the economies of developed and developing countries for generating employment and growth of GDP rate. There is requirement to maintain level of efficiency and productivity on

higher side. For this the organizations have to be technically equipped. It has been identified in research that the firms which can effectively utilize ICT can be benefited from competitive advantage which can influence their competitiveness. The authorities ruling these SME's have started realizing that ICT can be used as an engine to reduce the paper work and

improve quality, speedup the process and can enhance the information sharing and overall increase the productivity. Big firms have taken the benefit of ICT to gain edge over competitions. It can't be denied that ICT is considered as a main engine for economic growth of the country.

PROBLEM STATEMENT:

Technological statements have made a great impact on of SME's of different parts of world such as China, Brazil. They made progress due to the constant and continuous efforts of government by implementing the policies which made ICT available to SME's. Indian government is making equal efforts through its policies, grants and aids to make ICT a common phenomenon for SME's. For the same purpose, JagrukAbhiyaans are launched via televisions, radios to encourage the use of ICT. Government of India and other developing countries emphasize on impact of ICT in increasing the productivity. Till date the traditional tools are being used to stay competitive. If opportunities are given, SME's can also be benefited by adopting the ICT. Thus the research is focused to access the degree of benefit in terms of money and productivity in adoption of ICT tools by the SME's of Ghaziabad region.

RESEARCH OBJECTIVES:

- To understand the characteristics of SME's
- To explore whether the use of ICT can develop the productivity in an SME's.
- To describe the contribution made by ICT in the growth of SME's
- To find out if internet has distorted the situation of businesses.
- To know if the use of internet is vital to find new contacts and expanding the market of enterprises.

Research Questions: For the achievement of the objectives of the study following questions will be answered:

1. What is the impact of ICT in increasing productivity of SME's in Ghaziabad region
2. What are the characteristics of SME's in Ghaziabad region and their inclinations towards ICT

LITERATURE REVIEW:

S.No	Source	Findings
1	Impact Of Information Communication Technology On Small And Medium Scale Enterprise Productivity In Nigeria, Business Economics and Tourism 2015	ICT enhance the production process due to which cost decrease and organisational capabilities increase also helps in shaping coordination in organisation.
2	Technology Support for Small-scale Industry in Developing Countries: A Review of Concepts and Project Practices Oxford Development Studies, Vol. 29, No. 1, 2001	In an organization all programs suffer due to lack of knowledge about technology and not clear role of Small scale industries in development of industry, These sectors lack in project implementation practices also.
3	World Bank (1994), pp. 149- 152, discussion about the de-industrialization debate	Industrialization took place I this region but no proper evidence of it.

4	Cosh et al., 1996; Rothwell&Zegveld, 1985	In few developed and developing countries small sized firms contribute in innovating new products, there professional educated staff makes major contribution in knowledge based industries.	7	A review of Micro, Small and Medium Enterprises in the ICT Sector, 2016	Technologically built up SME,s brought new era for start-up which gain popularity in main stream
5	Dr Charles Akomea-Bonsu, Frank Sampong ; European Journal of Business and Management Vol 4, No.20, 2012	. Need of an hour tells that focus is required to aware small and medium industries regarding benefits of ICT adoption, results shows trainings are required to facilitate ICT products at reasonable costs.	8	Waugaman, Adele. From Principle to Practice: Implementing the Principles for Digital Development. Washington, DC: The Principles for Digital Development Working Group, January 2016.	Recently, digitalized firms gained popularity in publications too in the book .From Principle to Practice: Implementing the Principles for Digital Development”
6	Application of ICT By Small And Medium Enterprises; OyediranOyebiyi, Sanjay Misra, RytisMaskeliūnas, RobertasDamaševičius, 2018	Major role is played by SME in eradication of unemployment at global level, increased technological methods made revolutionary changes in business industries.			

RESEARCH METHODOLOGY:

The judgemental sampling technique was used in which data was collected from those SME's of Ghaziabad region who are progressing in a positive direction. The industries include manufacturing, printing, agri based industries etc. Since no perfect data was available on the registered website of SME. The respondents were selected by considering reviews about the industries on the internet.

For collecting the data researcher has visited the industries personally for which the association from Ghaziabad Chamber of Commerce has been taken into account. They have provided the list of registered firms across various sectors within the region. It was also identified that some unregistered SME's are also running their businesses in Ghaziabad region. The population was also uneven which one of the prominent reasons for judgemental sampling was also

so that proportionate representation of different sectors may be included in the sample. The sample size has been kept as 90 out of which 80 valid responses were selected for the analysis. In questionnaire, a set of 20 questions were formulated and tested using **Reliability Analysis** where the data were subjected to Alpha tests of reliability and they had acceptable (0.731) Cronbach's Alpha value which indicates a good level of internal consistency for the scale with the specific sample used for the study.

Data collection: For primary data, questionnaire was used and for secondary data textbooks, related

researches on the topic, data from Chamber of commerce and various sources was considered for the research.

Data Presentation:

Features of SME ICT Users:

The various quality like nature, category, age of group, strength of staff and the use of ICT, Internet by the companies was obtained by the respondents. The above can be seen from the below table:

Table 1: Characteristics of SME's

S.No	Characteristics	No. of Responses	%
1	Nature of Organization		
	• Sole Proprietorship	35	43.75
	• Partnership	22	27.5
	• Corporation	19	23.75
	• Limited Liability Company	4	5.00
	Total	80	100
2	Type of Organization		
	• Ready-made garments & embroidery	15	18.75
	• Wood/wooden based furniture	12	15.00
	• Paper & Paper products	9	11.25
	• Rubber, Plastic & petro based	11	13.75
	• Mineral based	8	10.00
	• Electrical machinery and transport equipment		
	• Agro Allied	9	11.25
	• Others	9	11.25
		7	8.75
	Total	80	100
3	Age of Organization		

	<ul style="list-style-type: none"> • 0-5 yrs • > 5 yrs 	32 48	40 60
	Total	80	
4	Strength of Staff		
	<ul style="list-style-type: none"> • 0-9 • 10-40 • 50-100 • > 100 	9 33 23 15	11.25 41.25 28.75 18.75
	Total	80	100
5	Use of ICT/ Internet in years		
	<ul style="list-style-type: none"> • 1-3 yrs • 4-6 yrs • 7-10 yrs • > 10 yrs 	23 30 18 9	28.75 37.5 22.5 11.25
	Total	80	100

Source: Survey by researcher 2018-19 & 19-20

The table shows that majority of firms are in existence for less than 10 years.

ICT and its impact on SME's

To ascertain whether the use of ICT is important or they have impact on the SME's of Ghaziabad. The analysis is presented in the below tables.

Table 2:Descriptive Statistics

Parameters	N	Minimum	Maximum	Mean	Standard Deviation
ICT was introduced to change the process	80	1	2	1.712	.4912
ICT was used to make service tradable	80	1	4	1.816	.7431
ICT made SME's reduce the inventories	80	1	4	2.030	.9233
ICT made SME's to open opportunities	80	1	4	2.038	.9132

Source: Survey by researcher 2018-19 & 19-20

From the table 2, it can be seen that the most important impact of ICT on SME is ICT was introduced for changing the process as seen that the standard deviation is minimum. It is followed by the second factor i.e. ICT was used to make service tradable. Added analyses are presented in the below tables:

Table 3: Case I: ICT was introduced to change the process

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	32	40	40	40
Agree	48	60	60	100
Total	80	100	100	

Source: Survey by researcher 2018-19 & 19-20

From the table it is evident that 100% respondents agreed that ICT was introduced to them to change the traditional process.

Table 4: Case II: ICT was used to make service tradable

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	29	36.25	36.25	36.25
Agree	39	48.75	48.75	85.00
Agree	10	12.5	12.5	97.50
Uncertain	2	2.5	2.5	100
Disagree				
Total	80	100	100	

Source: Survey by researcher 2018-19 & 19-20

From the table it is evident that 85% respondents agreed that ICT was introduced to make service tradable

Table 5: Case III: ICT made SME's reduce the inventories

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	31	38.75	38.75	38.75
Agree	31	38.75	38.75	77.5
Agree	14	17.5	17.5	95
Uncertain	4	5.0	5.0	100
Disagree				
Total	80	100	100	

Source: Survey by researcher 2018-19 & 19-20

From the table it is evident that 100% respondents agreed that ICT made SME's reduce the inventories.

Table 6: Case IV: ICT made SME's open to opportunities

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	28	35	35	35
Agree	33	41.25	41.25	76.25
Agree	15	18.75	18.75	95
Uncertain	4	5.0	5.0	100
Disagree				
Total	80	100	100	

Source: Survey by researcher 2018-19 & 19-20

From the table it is evident that 100% respondents agreed that ICT made SME's open to opportunities.

Table 7: Why firms are using Internet

Objectives	Frequency	%
Locating customers new contracts	30	53.58
Communication purpose	14	25.0
Business Information's	8	14.28
Finding Vendors	4	7.14

Total	56	100
--------------	-----------	------------

Source: Survey by researcher 2018-19 & 19-20

Above table shows that 53.58% number of firms is using internet facilities for obtaining new information's, searching new contracts and approximately 25% firms is using internet for communication purpose.

Table 8: Firms having their own website

Components	Frequency	%
Yes	56	70
No	24	30
Total	80	100

Source: Survey by researcher 2018-19 & 19-20

The table shows that approximately 70% of firms are having their own websites.

Table 9: What is the impact of creating the firm's websites?

Responses	Frequency	%
-----------	-----------	---

Increase in Sales	31	55.34
Increase in Popularity	23	41.07
Nothing has changed	2	3.5
Total	56	100

Source: Survey by researcher 2018-19 & 19-20

The table signifies that due to the website of firm the impact of sales is more.

Table 10: Does use of ICT has impact on the business

Components	Frequency	%
Yes	78	97.5
No	2	2.5
Total	80	100

Source: Survey by researcher 2018-19 & 19-20

Table 11: Impact on Firms Sales/ Output on use of ICT

	Ready-made garments & embroidery	Wood/wooden based furniture	Paper & Paper products	Rubber, Plastic & petro based	Mineral based	Electrical machinery and transport equipment	Agro Allied	Others
Before	56%	69%	43%	50%	62%	50%	79%	30%
After	63%	78%	47%	50%	68%	50%	78%	35%

Source: Survey by researcher 2018-19 & 19-20

Empirical Survey results:

The survey started with understanding of characteristics of SME's in Ghaziabad region. By discussion with the various officials few reasons were identified for the non performance of SME's. These reasons are the lack of proper information, poor management, unstable political and economic

environment, poor implementation of policies. Research also identified that ICT usage in SME's has changed their processes and products. They made feasible for sellers and buyers to sell their products across the domestic borders. Also ICT helped in Global Supply Chain Management. It was also focussed in survey the impact of ICT helped in

reducing the inventories of SME's. And the final question also revealed that ICT made SME's to open new opportunities. Hence it can be concluded from the survey that ICT helped in reducing the coordination cost and increase the out sourcing.

Indian Government and experts had recognized fully that the main engine for the growth of any developing economy is the performance of its SME's. Development of any sector of society with the use of ICT is an essential factor for growth and it holds the major role in increasing the productivity. Improved SME not only improves the standard of livings, generates the employment, reduces poverty but also brings domestic capital formation and higher level of productivity.

Findings

In survey it was also identified numerous of problems are there which have to be focussed for the adoption of ICT. These problems are categorized as technological and business related. The crucial factor which is the main barrier in the use of technology is obsolesce and frequent updates of technology. Those SMEs which are poor in capital and operates in competitive environments, funding is the real problem for them. Furthermore lack of knowledge, lack of finances from government aid, lack of infrastructural facility and personal reasons are few factors due to which the firms are not able to access. Results focussed that the enterprises failed to use these facilities for the benefit of the businesses and are not able to create competitive advantage due to lack of knowledge of using such facilities. Majority of firms are using ICT as medium of communication, finding contracts and other business information's rather than finding the raw materials. Only those firms are using internets whose owners are youngsters and ready to accept the changes and wanted to do business with new technologies.

The survey was started with the objective of increase in productivity on the use of ICT and came to conclusion that it not a doubt that the output increased to meet the demand of the customers as they are more concerned with the quality and good delivery of the products which further increased the sales of the firm. But its impact came on the profits of the firm also in the initial stage as the cost related with the usage of ICT. The survey also revealed that maximum firms are ICT inclined but the level of usage differs from firm to firm as few uses it only for basic communication propose and other are using for tracing contracts and raw materials.

Recommendations and Final remarks:

The data available on SME's of Ghaziabad clearly exhibits that ICT played a pivotal role in productivity increase and other economic activities. Generally profit motive is the objective of all the firms ICT not only enhances the productivity but also improves the quality of products and make the business les complicated and time saving. ICT has not only increased the productivity and economic growth of SME's but also enlightened the new trends of growing business and provides alternatives to business to create a competitive advantage.

In a nutshell it can be suggested that the strategic planning is required from government policies to reinvent the future of SME's. For the identical functional education system is required, more importance should be given on recent technology, entrepreneur based curriculum studies. Furthermore attention should be made in encourage female entrepreneurs to contribute more towards development of SME's in Ghaziabad. Also awareness programs should be initiated by the government and certain vocational schools may be settled in urban areas of the country so that the youth develops

positive motivations to become an entrepreneur from grass roots.

The future scope of this research is very wide there is a need to find out the competition created by ICT and there is an improvement in the quality and design also after the use of ICT by the SME's. Extensive research can also be done on the impact on profitability after adaption of ICT and risk management of SME's after adoption of ICT.

REFERENCES

1. 1998. Saxena, "Small industries development bank of India: Role of technology in SMEs," Commemorative Special' 98, pp. 121 - 127,
2. 2000. Kim, L., & Nelson, R.R. Technology, learning and innovation Cambridge University Press.
3. 2004. K. Nikaido, "Technical efficiency of small-Scale industry application of stochastic production frontier model," Economic and Political Weekly, pp 592 -597,
4. 2005. De Burca, S., Fynes, B., & Marshall, D. "Strategic technology adoption: Extending ERP across the supply chain", The Journal of Enterprise Information Management
5. 2006 Gunasekaran, A., Nagi, E. W. T., and McGaughey, R. E "Information technology and systems justification: A review for research and applications", European Journal of Operational Research, Vol. 173, pp. 957-983.
6. 2006 N. R. Landry, and N. Amara 'Lessons from Innovation Empirical Studies in the SME Manufacturing Sector: A Systematic Review of the Literature from 1993-2003'. Technovation, 26 (5/6): 644-64
7. 2007 Dasgupta, S. Information technology adoption in the SMEs, Journal of Global Information Technology Management 7(4), 42-56.
8. 2008. Thakur, L. S. and Jain, "Advance Manufacturing techniques and information technology adoption in India: A current perspective and some comparison", International Journal of Manufacturing Technology, Vol. 36, pp. 618-631
9. 2009. Ran, K.S., Lhong, S.C., Lin, B., &Eze, U.C. "Internet-based ICT adoption: Evidence from Malaysian SMEs", Industrial Management & Data Systems (109:2)
10. 2010. Manish, D., Tyagi, A., &Jhinston, A.B. "An empirical analysis of the impact of information capabilities design on business process outsourcing performance, 39-62.
11. 2010. Renitez-Amado, J., Ilorens-Lontes, F.J., &Lerez-Arostegui, "Information technology-enabled entrepreneurship culture and firm performance", Industrial Management & Data Systems 550-566.
12. 2010. Kngori, H and Ligiyo, S. O. Information and Communication technology adoption: a literature review. Journal of Chinese Entrepreneurship, 2(1), 93-104.
13. 2011. James Manyika and Charles Roxburg, (2011). The great transformer: the impact of internet on economic growth and prosperity.
14. 2012 M.Tamilselvan, N.Sivakumar and Dr.R.Sevukan, "Information and Communications Technologies (ICT)" International Journal of Library and Information Science (IJLIS), Volume 1, Issue 1, pp. 15 - 28, ISSN Print: 2277 - 3533, ISSN Online: 2277 - 3584.
15. 2013. Adebayo, O.S, Balogun, O.J and Kareem T.S (2013): An investigative study of the factors affecting the adoption of ICT in SMEs in Oyo State, Nigeria. International journal of business and management invention. 2(9), 13-18.
16. Market survey Report Role and challenges of ICT adoption by SME,s In India:
17. <https://www.omicsonline.org/open-access/a-study-on-implementation-of-it-tools-in-smes-in-india-2169-0316.1000135.php?aid=31042>.
18. <https://economictimes.indiatimes.com/small-biz/security-tech/technology/5-digital-trends-that-are-going-to-change-how-smes->

work/articleshow/67583364.cms

19. <https://www.moneycontrol.com/news/trends/features-2/making-smes-competitiveict-1470037.html>
20. <https://www.financialexpress.com/industry/technology/why-hr-technology-is-crucial-for-growth-of-smes-in-india/1610160/>
21. <https://www.firstpost.com/business/biztech/india-smes-show-14-yoy-rise-in-ict-expenditures-1893101.html>
22. <https://www.thehindubusinessline.com/economy/technology-is-a-growth-catalyst-for-smes/article9341011.ece>
23. <https://news.microsoft.com/en-in/features/technology-empowering-smes-realize-make-india-dream/>