

IMPACT OF INFORMATION TECHNOLOGY IMPLEMENTATION ON PRODUCTIVITY IN SMALL MEDIUM SCALE ENTERPRISES (SMES) IN TAMILNADU

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ABSTRACT

The competitive environment and the technological innovation drives the implementation information technology behind any organizations which tries to achieve excellence. Nowadays, both large organizations and small and medium-sized enterprises (SMEs) are seeking ways to reinforce their competitive position and improve their productivity. There is an increasing consciousness of the necessity to derive profit through investment in information technology within SMEs. Information technology tools can significantly assist SMEs by supplying the required infrastructure, which is necessary for providing appropriate types of information at the right time. During the last few decades, organizations have made immense investments in information technology. The implications of these investments for productivity have been widely discussed in business and academic communities. This paper analyses the impact of implementation of information technology on productivity in SMEs.

Key words: SMEs, Productivity, IT, Information technology, Implementation of IT

1. INTRODUCTION

The modern economic environment which is dominated by globalization, hyper-competition and the knowledge and information revolution has revolutionized the way business is conducted¹. This new technological epoch is apparent through intensified investment in computer-processing and data preparation appliances in the manufacturing and service industries and telecommunications infrastructure, and also to its widespread usage in government agencies, educational organizations, and, more recently, in the household.

As a result of this technological progress, the implementation and application of information technology is a significant driving force behind many socioeconomic changes².

As the utilization and commercialization of information technology becomes more widespread throughout the world, the adoption of novel information technology can generate new business opportunities and various benefits. Nowadays, both large organizations and

small and medium-sized enterprises (SMEs) are seeking ways to reinforce their competitive position and improve their productivity³.

This paper analyses the impact of implementation of information technology on productivity in SMEs.

2. STATEMENT OF THE PROBLEM

There is an increasing perception of deriving profit through information technology implementation within the SMEs. Information technology tools can be helpful to the SMEs by providing right information at right time and providing the essential infrastructure. During the last few decades, organizations have made immense investments in information technology. The implications of these investments for productivity have been widely discussed in business and academic communities. Besides, according to the role of information technology in Business is essential for companies to increase potential impact of information technology to overall performance of a company. For several years, scholars and policy makers lacked conclusive evidence that the high levels of spending on information technology by businesses improved their productivity, leading to the coining of the term information technology Productivity Paradox⁴. So, this research made an attempt to prove the impact of information technology on productivity in SMEs.

3. REVIEW OF LITERATURE

In any event, research reflecting relationship between information technology investment and organizational performance and productivity might be more convincing if it were based on information technology investments in both current and earlier periods⁵.

As the utilization and commercialization of information technology becomes more widespread throughout the world, the adoption of novel information technology can generate new business opportunities and various benefits. Nowadays, both large organizations and small and medium-sized enterprises (SMEs) are seeking ways to reinforce their competitive position and improve their productivity⁶.

Appropriate use of information technology in the companies increase the productivity by three ways: Increasing the volume of capital used per worker (capital deepening), when firms invest in information technology, A speedup of growth of Total Factor Productivity (TFP) in industries producing information technologies, thanks to technological progress and a speedup of growth of TFP in industries using information technologies⁷.

Many studies showed no correlation between information technology investments and productivity growth, whereas research based on subsequent data and new assumptions mainly showed a positive and significant effect on productivity and economic growth⁸.

Indian manufacturing SMEs those enterprises that use more advanced forms of information technology have on average a higher productivity and a higher growth rate⁹.

In a survey of 59 electric and electronic manufacturing Indian SMEs mainly employing less than 50 people, it was observed higher profit margins, skill intensity and export and import intensities for firms using information technology¹⁰.

Although measurement problems and a debate about the sustainability of information technology enabled growth remain, there is now wide consensus that information technology does have positive effects on labour productivity and total factor productivity¹¹.

The impact of information technology on firm-level productivity is usually stressed that information technology investments must be combined with complementary investments in work practices, human capital and firm restructuring to have an impact on performance¹².

Information technology has indirect effects on productivity by enabling workplace reorganization and organizational change, stressing strong complementarities between these investments¹³.

The study was carried out to find the benefits of information technology on productivity.

4. RESEARCH QUESTION

Do information technology related practices influence the productivity of SMEs?

5. HYPOTHESES TESTED IN THE STUDY

1. There is an impact of information technology implementation on productivity.
2. There is a significant agreement between the respondents regarding the ranking of impacts of information technology on productivity.
3. Small & Medium Scale Enterprises (SMEs) in the state of Tamilnadu, according to the definition provided by the Industrial Policy of Government of India have been taken as the universe of the study. As per the Annual report 2014 – 2015 of Ministry of MSME in Tamilnadu 1,43,104 working enterprises in MSME sector have been taken as the universe.

6. RESEARCH METHODOLOGY

Small & Medium Scale Enterprises which have been registered and have been in production for past five years would be considered for the study. Simple random sampling technique has been used to ensure a wide geographical and industrial spread wherein the state of Tamilnadu. 20 Small & Medium Scale units from 32 districts of Tamilnadu has been considered for the study. So, total sample size is 640. Primary data related to research have been obtained through a structured questionnaire. The Official managing the organization at every SMEs have been asked to fill the questionnaire to collect the data.

The frequency distribution, mean score analysis, one sample T-test and Kendalls W test has been used for analysis to find the impact of information technology implementation on productivity.

7. DATA ANALYSIS

7.1 Information Technology implementation on productivity

The frequency distribution of the respondents based on the impact of Information Technology implementation on productivity is given in the following table:

Table: 1

Distribution of the respondents based on the impact of Information Technology implementation on productivity

Factors	Frequency					Percentage				
	SA	A	NAND	D	SD	SA	A	NAND	D	SD
Metrics for measurement of productivity level	107	355	100	40	38	16.7	55.5	15.6	6.3	5.9
Clear communication of expected productivity	104	357	100	42	37	16.3	55.8	15.6	6.6	5.8
Increased volume of capital	113	362	108	32	25	17.7	56.6	16.9	5.0	3.9
Increase in total factor productivity	116	369	106	28	21	18.1	57.7	16.6	4.4	3.3
Indirect cost saving	109	359	98	37	37	17.0	56.1	15.3	5.8	5.8
Reduction in unnecessary & Repetitive activities	120	370	110	25	15	18.8	57.8	17.2	3.9	2.3
Faster feedback	101	355	98	44	42	15.8	55.5	15.3	6.9	6.6

Note: SA -Strongly Agree, A -Agree, NAND -Neither Agree Nor Disagree, D -Disagree, SD -Strongly Disagree

It is interpreted from table 1, among total enterprises studied, more than 70% of enterprises agreed that the information technology impacted the productivity on following aspects: Metrics for measurement of productivity level, Clear communication of expected productivity, Increased volume of capital, Increase in total factor productivity, Indirect cost saving, Reduction in unnecessary & Repetitive activities and Faster feedback.

7.2 Mean Score analysis and one sample T-test for impact of information technology implementation on productivity

H₀: There is no impact of information technology implementation on productivity

H₁: There is an impact of information technology implementation on productivity

Table: 2

Mean Score analysis for impact of information technology implementation on productivity

Impact of IT implementation on productivity	N	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)	95% Confidence Interval for Mean	
								Lower Bound	Upper Bound
Metrics for measurement of productivity level	640	3.71	.221	.087	15.37	639	.000	3.43	4.04
Clear communication of expected productivity	640	3.70	.193	.126	21.28	639	.000	3.54	3.97
Increased volume of capital	640	3.74	.534	.073	26.33	639	.000	3.23	4.13
Increase in total factor productivity	640	3.83	.352	.083	18.45	639	.000	3.18	4.17
Indirect cost saving	640	3.73	.312	.064	15.68	639	.000	3.41	3.93
Reduction in unnecessary & Repetitive activities	640	3.87	.113	.045	30.21	639	.000	3.56	3.98
Faster feedback	640	3.67	.275	.067	37.37	639	.000	3.32	3.97

It can be interpreted from the table 2, that the result of one sample mean test, the significance value for all the 7 variables is 0.000 which less than 0.01. The alternate

hypothesis is accepted at 99% confidence level. So, there is an impact of information technology implementation on productivity. Hence, It is concluded that the information technology implementation brought following impacts on productivity: Metrics for measurement of productivity level, Clear communication of expected productivity, Increased volume of capital, Increase in total factor productivity, Indirect cost saving, Reduction in unnecessary & Repetitive activities and Faster feedback . The mean value for all the 7 variables is greater than 3. So it can be assumed that the information technology brought agreeable impact on productivity.

7.3 Kendall's W Test for ranking of impact of information technology implementation on productivity

Kendall's W Test is used to check whether there is any significant agreement in the ranking of impacts of information technology on productivity.

The following hypotheses are used to check significant agreement in ranking.

H_0 : There is no significant agreement between the respondents regarding the ranking of impacts of information technology on productivity

H_1 : There is a significant agreement between the respondents regarding the ranking of impacts of information technology on productivity

Table: 3

Kendall's W Test for ranking of impacts of implementing information technology on productivity

Factors	Mean Rank	Assigned Rank
Metrics for measurement of productivity level	4.56	5
Clear communication of expected productivity	4.48	6
Increased volume of capital	4.76	3
Increase in total factor productivity	4.87	2
Indirect cost saving	4.65	4
Reduction in unnecessary & Repetitive activities	4.93	1
Faster feedback	4.34	7

Table: 4
Kendall's W Test for ranking of impacts of implementing information technology on productivity – Test statistics

N	640
Kendall's W(a)	.981
Chi-Square	1238.23
Df	6
Asymp. Sig.	.000

It has been clear from the Table 4 that the value of the Kendall's W has been 0.981 and the significance level has been 0.000. This significance value has been less than 0.01. It clearly shows that there is a highly positive agreement between the respondents regarding the ranking of impacts of information technology on productivity at 99 percent confidence level. It can be concluded from table 3 that among the positive impacts of information technology on productivity the Reduction in unnecessary & Repetitive activities got the ranking of 1, Increase in total factor productivity got the ranking of 2, Increased volume of capital got the ranking of 3, Indirect cost saving got the ranking of 4, Metrics for measurement of productivity level got the ranking of 5, Clear communication of expected productivity got the ranking of 6 and Faster feedback got the ranking of 7.

7.4 DISCUSSION AND CONCLUSION

When evaluating the impacts of IT implementation, IT adoption brought the improvements in productivity through the reduction in unnecessary & repetitive activities, increase in total factor productivity, increased volume of capital and Indirect cost saving. We will get faster feedback because of implementation of information technology. Alignment of Information technology with business strategy ensure the SMEs objectives which leads to success and growth in business. The present research would be useful for the SMEs interested in implementing information technology practices in their enterprises.

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