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Barriers of information and communication technology implementation in small and medium enterprises

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Abstract
Now-a-days organisations of all types are utilising Information and Communication Technologies (ICT) around the globe for cutting costs, improving efficiency and providing better customer services. Most of the large and international organisations in India have effective computer systems to efficiently conduct business. A number of large organisations have spent huge amount of money on installing computer systems to support their business processes. However, the situation has not been the same with small and Medium-sized Enterprises (SMEs) similar to other parts of the world for various reasons. The objective of the present study was to analyses the barriers of Information and Communication Technologies of Small and Medium Enterprises in Cuddalore District The purpose of the study, samples size of 450 small and medium sized entrepreneurs are selected from convenience sampling techniques. The collected primary data are subjected to various statistical techniques from descriptive statistics like Simple Percentage, Mean and Standard deviation. The study reveals that 34.44 per cent of the respondents are small scale enterprises and 65.56 percent of the respondents are medium scale enterprises. Majority of the small scale enterprises are classified as sole proprietors and majority of the medium-scale enterprises are categorized as Partnership. Barriers of information and communication technology implementation by small and medium sized enterprises are high in lack of awareness of the technology, lack of qualified staff and low e-commerce use by competitors and supply chain partners. Whereas the low level were shows low computer and Internet penetration and lack of fixed telephone lines.

Keywords: information and communication technologies (ICT), organisations, computer, internet penetration

Introduction
Now-a-days organisations of all types are utilising Information and Communication Technologies (ICT) around the globe for cutting costs, improving efficiency and providing better customer services. The adoption of ICT by organisations requires a business environment encouraging open competition, trust and security, interoperability and standardisation and the availability of finance for ICT. Small and Medium-Sized enterprises (SMEs) play an important role in economic development of a country. Several theories elaborate on connection between information technology, economic development and social change. SMEs would need as well as effective information systems to support and to deliver information to the different users. Such information systems would include those technology that support decision making, provide effective interface between users and computer technology and provide information for the managers on the day-to-day operations of the enterprises. Information is very important aspect of decision making in all levels of management in enterprises, especially in competitive business environment and managers utilise information as a resource to plan, organise, and staff administer and control activities in ways that achieve the enterprises objectives. Most of the large and international organisations in India have effective computer systems to efficiently conduct business. A number of large organisations have spent huge amount of money on installing computer systems to support their business processes. However, the situation has not been the same with small and Medium-sized Enterprises similar to other parts of the world for various reasons.

Review of Literature
Duncombe *et al*, (2001) [3] discussed the opportunities that ICT provides for SMEs in developing countries. SMEs, vital to the economy in any country, are very often recognized as an economy growth engine. Cloete *et al*, (2002) [2] argued that low use of e-commerce by customers and suppliers, concerns about security, concerns about legal and liability aspects, high costs of development and computer and networking technologies for e-commerce, limited knowledge and Impact of ICT on Performance of SMEs in Karnataka e-commerce models. Zowghi and Sarosa (2003) [6] stated that research to data has concerned on identifying drives and barriers to adoption of ICT and there is still a lack of strategy, frameworks or models that actually guide SMEs in the adoption process. Brown *et al*, (2005) [1] identified the problems that some SMEs face whilst engaging in on-line trading or collaboration with supply chain partners. They

argued that the complexity of business operations as well as company size matter in respect of ICT adoption and use in SMEs. Iacovou *et al*, (2005) [4] found that the owner's lack of awareness of the technology and perceived benefits is a major barrier to a take up of e-commerce. The lack of knowledge on how to use the technology and the low computer literacy are other contributory factors for not adopting e-commerce. Kapurubandara *et al*, (2006) [5] have categorized internal and external barriers that impede adoption of ICT by SMEs in a developing country. The internal barriers include owner manager characteristics, firm characteristics, cost and return on investment, and external barriers include: infrastructure, social, cultural, political, legal and regulatory.

Objectives of the Study

The objective of the present study was to analyse the barriers of Information and Communication Technologies of Small and Medium Enterprises in Cuddalore District.

Scope of the Study

In the present research, the researcher was going to deal with potential for analysis of barriers of information and communication technology in small and medium-sized enterprises in Tamil Nadu. Since it is not possible to cover the entire state of Tamil Nadu, a sample of selected small and medium-sized enterprises in Cuddalore District was considered for the study. Cuddalore District has a large number of populations; more number of small and medium scale industries and financial institution are situated in this District.

Methodology

The study focuses on perceptions of small and medium entrepreneur with regard to problem faced by ITC implementations. The information for the study is collected from major sources of primary data through questionnaire. The target population for data collection was the small and medium sized enterprises in Cuddalore District. The purpose of the study, samples size of 450 small and medium sized entrepreneurs are selected from convenience sampling techniques

Statistical Techniques

The collected primary data are subjected to various statistical techniques from descriptive statistics like Simple Percentage, Mean and Standard deviation.

Limitations of the Study

The study is confined to following limitations.

1. Due to paucity of time, the size of the sample has been restricted to 450 from Cuddalore District is taken into consideration.
2. The study is confined only to the owner/head of industries, and so the outcome could not be generalized to the other categories of employees.

Analysis and Interpretation

The findings from the analysis of the barriers of Information and Communication Technologies of Small and Medium Enterprises in Cuddalore District are followings.

Table 1: Size of Enterprises

S. No.	Size of Enterprises	No of Respondents	Percentage
1	Small	295	65.56
2	Medium	155	34.44
	Total	450	100.00

Table -1 show that out of 450 sample respondents, 65.56 per cent of the respondents are small scale enterprises and 34.44 percent of the respondents are medium scale enterprises, which is 155 of the total companies, showing that in the study area is more in small scale enterprises.

Table 2: Nature of the Business

S. No	Nature of Business	No of Respondents	Percentage
1	Manufacturing	270	60.00
2	Service	180	40.00
	Total	450	100.00

Table -2 shows that out of 450 sample respondents, 60.0 per cent of the respondents are manufacturing enterprises and 180 respondents are service companies, which is 40.0 per cent of the total companies, showing that in the study area is more in manufacturing enterprises, as it was first developed in these types of enterprises.

Table 3: Status of the Respondents

S. No	Status	No of Respondents	Percentage
1	Owner	150	33.33
2	Supervisor/ Manager	300	66.67
	Total	450	100.00

Table 3 reveals that total of 450 respondents are interviewed 150 respondents are owner of the industry and 66.67 percent of the respondents are manager/ supervisor. Maximum of the enterprises were maintained the organization with manager/supervisor.

Table 4: No of Employees

S. No	No of Employee	No of Respondents	Percentage
1	Below 50	63	14.00
2	50 - 100	135	30.00
3	100 - 150	200	44.44
4	Above 150	52	11.56
	Total	450	100.00

In this regard from the table 4, nearly 14.0 percent of the sample enterprises have below 50 employees, 30.00 percent of the sample enterprises have their operations between 50 - 100 employees, 44.44 percent of the sample enterprises have their operations between 100 - 150 employees and only 11.56 percent of the sample enterprises have their operation Above 150 employees. It is concluded that majority of the respondent have operation with 100-150 employees.

Table 5: Type of Ownership

S. No	Types of Units	Small-scale		Medium-scale	
		No.	percentage	No.	percentage
1	Sole Proprietorship	217	73.56	40	25.80
2	Partnership	45	15.25	75	48.39
3	Private Company	33	11.19	40	25.81
	Total	295	65.56	155	34.44

From the table 5, out of 450 total enterprises, 295 small-scale enterprises, 73.56 per cent are classified as sole proprietors, 15.25 per cent are partnership firm and 11.19 per cent are private company. On the other hand, most medium-scale enterprises are (48.39 per cent) categorized as Partnership businesses with only a small proportion (25.80 per cent) classified as sole proprietorship enterprises.

Table 6: Experience of Current Business

S. No	year	No of Respondents	Percentage
1	Below 1 Year	52	11. 56
2	1-5 Years	110	24.44
3	5-10 Years	225	50.00
4	Above 10 Years	63	14. 00
	Total	450	100.00

The number of years in business normally determines one's level of exposure and experience in the field of business. As indicated in Table - 6, majority of small and medium scale enterprises (50.00 per cent) have been running in business between 5 to 10 years, whereas, 24.44 percent of the sample enterprises run between one to five years and only 11.56 percent of the enterprises below one year. It is also evident that few enterprises (from both small and medium-scale) representing 14.00 percent have been in business for over 10 years.

Barriers of information and communication technology implementation by small and medium sized enterprises are measured in the following manner. The level of categories as high, moderate and low, If the value of impact is more than mean 4.43 (overall mean + standard deviation = 3.45+ 0.98) is considered as high level. If the values less than mean 2.47 (over all mean – standard deviation = 3.45 - 0.98) is considered as low level impact. If the value is in between high and low is considered as moderate level. The results are presented in table 4.53.

Table 7: Barriers of ITC Implementation

S. No	Barriers	Mean	SD
1	lack of awareness of the technology	4.67	1.22
2	lack of timely and reliable	3.56	1.02
3	lack of qualified staff	4.52	0.78
4	low computer and Internet penetration	2.45	0.89
5	low income	3.11	0.99
6	lack of fixed telephone lines	2.11	1.03
7	Lack of developed legal and regulatory systems	2.87	1.09
8	low e-commerce use by competitors	4.59	0.88
9	low knowledge level of management and employees	3.35	0.79
10	high cost of Internet access	2.85	0.87
11	lack of online payment processes	3.45	1.21
12	Uncertain taxation rules indirectly inhibit e-commerce	3.60	0.96
13	Inadequate telecommunication infrastructure	3.56	1.07
14	Uncertainty benefits of electronic commerce	4.11	1.02
	overall	3.45	0.98

An observation of the Table 7 shows Barriers of information and communication technology implementation by small and medium sized enterprises are high in lack of awareness of the technology, lack of qualified staff and low e-commerce use by competitors and supply chain partners. Uncertainty about the benefits of electronic commerce, Uncertain taxation rules indirectly inhibit e-commerce, Inadequate telecommunication infrastructure, lack of timely and reliable, low knowledge level of management and employees, low income, Lack of developed legal and regulatory systems were 'moderate level' with secure mean score range between 2.47 - 4.43, whereas the low level of barriers of ITC implementation were shows low computer and Internet penetration and lack of fixed telephone lines.

Conclusion

Small and Medium Enterprises are increasingly aware of the positive impact that Information and Communication Technology can have as these technologies spread through their organisations. Among the different tools for SME development and competitiveness, ICT have become widespread in every activity sector over the last several decades. Behind this very general acronym hides a multitude of technologies- for example, computers, Internet, groupware, Electronic Data Interchange and Enterprise Resource Planning that are supposed to improve the performance of organisations. The strategies implemented by companies to encourage ICT and electronic commerce are theoretically supposed to improve company performance through cost reductions and differentiation strategies. The organization structure is poorly suited to the effective implementation of information technology and it need to be restructured. The industry should also take steps for enhancing the level of knowledge and skill of their employees at all levels by imparting training in Information Technology.

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