To study the current status and extent of ICT adoption in the manufacturing SME's of Ambala Division of Haryana.

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Abstract

The present paper is based on the objective of current status and extent of ICT adoption on small scale Industrial Units of Ambala division of Haryana, India. SMEs play a central role in the overall growth of the industrial economy of the country. Rather, Small and medium Enterprises 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 SMEs 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.

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

Introduction

In many developing nations, small and medium enterprises (SMEs) account for a significant share of employment and production and are therefore directly connected to poverty alleviation. Especially in developing nations, SMEs are challenged by the globalization of production and shift in the importance of the various determinants of competitiveness. Through the rapid spread of information and communication technologies (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.

SME's & Economic Development

Economic development of a country is directly associated with the amount of industrial growth. The enlargement of industrial sector leads to a larger and proper utilization of natural resources, production of goods and services, creation of employment opportunities and improving within the general standard of living. India has additionally making efforts to develop the country's industrial base since independence. It

has framed numerous policies geared toward development of industries within the public and private sectors. Special stress has been laid on SSI. SSI plays a key role in the planned development with its benefits of low investment, high potential for employment generation, diversification of the industrial base and dissemination of industries to rural and semi urban areas. The SSI division has been properly given a deliberate position in planned economy forocio-economic, equitable growth. P.N.Dhar and H.F.Lydall in introduction to their book, "The Role of Small Enterprise in Indian Economic Development" have ascertained that 'The promotion of small scale industries has been widely recommended as one of the foremost acceptable means of developing industry in over populated backward countries',(Ministry of Small Scale Industries , Government of India ,2006).

After Independence, the foremost task for the government was to realize fast industrialization of the country within the overall framework of a state. The set objective of economic growth with social justice was kept in while making overall strategy of industrial development. Large, medium and small industrial units have been allotted a reciprocally complementary role with a view to facilitate an integrated and harmonious growth of industrial sector as a whole. Industrial Guidelines of the Administration of India and the particularly State-owned Governments have been inspiring the small scale enterprises so as to fulfill the objectives of decentralization of industries, employment generation and entrepreneurial development.

In the absence of adequate data, exclusively on the SMEs sector, it was difficult to make realistic assessment of the performance of SMEs. It is very clear from the commencement of expansion programs, the reinforcement of several stagnant rural community and cottage trades were given a prominent place in the country's economic agenda. The guiding principles were enshrined in the Directive Principles of State Policy in the Constitution of India, which enjoined upon the state to strive to minimize income inequalities and regional discrepancies, and encourage cottage trades in the village areas. Because of the historical background and the constitutional mandate, the Government of India, while framing the industrial policy, accorded special status and importance to the "Small and medium enterprises".

Small and Medium Enterprises play a vital role in the growth of the Indian economy by contributing 45% of the industrial output, 40% of exports, 42 million in employment, create one million jobs every year and produces more than 8000 quality products for the Indian and international markets. Ultimately, Small and Medium Scale enterprises are today open to greater prospects for enlargement and diversification across the sectors. The Indian market is growing rapidly and Indian industry is making remarkable progress in various Industries like Manufacturing, Precision Engineering, Food Processing, Pharmaceuticals, Textile & Garments, Retail, IT, Agro and Service sectors. SMEs increase opportunities to improve their professional accomplishments in core sectors. In a developing country like India, the role and importance of small-scale industries are very significant towards poverty eradication, employment generation, rural development and creating regional balance in the promotion and growth of various development activities.

Literature Review

Apulu et al. (2011) acknowledged eight significant causes that stimulus effective use and the adoption of more sophisticated or advanced ICT solutions for Nigerian SMEs: steady energy supply, government support and better services from Internet service providers, improved Infrastructure acquisition skills and support the owner-manager. In addition, the study found that the lack of electricity has a negative effect on SMEs to use refined ICT systems. Deprived provision of Internet service providers, poor infrastructure, and absence of transparency due to the extreme corruption in the nation and the absence of ICT skills among workforces also disturb many small and medium-sized businesses.

Koning and Gelderblom, (2006) believes that older workers' groups make less practice of ICT in their professions, practice a smaller amount of complex applications and have more strain in using ICT than young workers. The study accomplishes that ICT undermines the situation of older employees and that the use of ICT and, in specific, the level of use, positively affect performance.

Birchall and Giambona, (2008) said that many administrators did not trust much in information management policies and business practices. They felt that there was not much room for improving the effectiveness of ICT to support decision-making:

• Availability of better tools to support decision-making.

• Access to particular information services.

• Better integration of systems across the enterprise.

• Effort to categorize and improve appropriate organizational beliefs.

• Efforts to increase responsiveness and capacity absorption of the ICT development   organization.

• Workshops to increase individual efficiency in information technology.

• More emphasis on work instead of synchronous and asynchronous tools.

Andersen and Segars studied the effects of performance can derive from the capability to enrich communication proficiency that make decentralized decision making more operational. Study has also explored this work by allowing decentralized organizational arrangements, where the ability to improve communication is a guiding element in the value formation procedure.

Tan et al. (2009) proposed that companionable, intricacy, expertise and observation security are significant factors that encourage the adoption of Internet-based ICT. It has also been submitted that ICT implementation responsible for less operative communication tools for clients and the important difficulty to the adoption of information technologies is based on Internet security.

Kyobe (2011) examined three significant factors that encourage the implementation of ICT in South Africa: experience, the ability to adopt and use technology, policy factors, and government policies. The adoption and use of ICT has found the most substantial among all including the level of returns, cognitive capabilities, technological infrastructure and other factor related aspects.

Chowdhury (2006) proposed that the progressive influence of ICT investments in SMEs in eastern Africa in the framework of overall market development and also submitted that the destructive influence on labor efficiency and the rate of return.

Research Methodology

Objective of the Study

- To measure the current status and extent of ICT adoption among small and medium scale enterprises in the Ambala division of Haryana State.
- To study the comparison of use of overall use of ICT in small and medium scale enterprises in the Ambala Division of Haryana.

Profile of the respondents

The majority of the respondents were male (n = 90, 90%) whereas female participants were fewer (n = 10, 10%) as compared to male. This was quite expected because in India, the proportion of female entrepreneurs is very low. Maximum number of participants were in the age group of 40-49 (n = 42, 42%), followed by above 50 years (n=31, 31%). Also, there were quite young business men from the age group of 20-29 years (n=20, 20%) and 30-39 years (n = 7, 7%).

The firms included in the study are small and medium scale industrial units. Most of the firms were employing 10-49 workers/employees (n = 36, 36%), followed by 50-100 workers (n = 35, 35%). Few of the companies were employing below 10 workers (n =15, 15%) and above 100 workers (n=14, 14%).

Regarding the turnover of the firms, 32 firms (32%) of the firms had turnover between 25 lakh to 1 crore rupees. 22 (22%) firms had turnover between 1 cr – 5 cr rupees. Another 46 (46) firms had a turnover in the range of 5 cr. to 10 cr rupees.

From the profile of firms, it is quite obvious that the truly small and medium scale firms have been included in the study. From the profile it is also clear that the firms are not expected to be too much in advance in their technology.

Data Collection

Data was collected from both secondary and primary sources. Research papers, articles, annual reports of the ministry of MSMEs and CII were used to collect secondary data. With the help of Structured questionnaire data was collected from the respondents. A Questionnaire was designed after extensive literature review, including national as well as international studies in order to identify the status of ICT adoption among small and medium scale enterprises.

Population

The target population of this study included the small and medium scale enterprises in two major industrial districts of Ambala division in Haryana i.e. Ambala and Yamunagar.

By definition, with the turnover of the firm, size of the firm is determined. According to the ministry of MSMEs and Chamber of Commerce and Industry classification of small and medium scale enterprises is classified as follows:

- Medium Enterprises   Turnover from 5 crore to 10 crores rupees
- Small Enterprises   Turnover from 25 lakhs to 5 crore rupees

Respondents

 CEO/Partner/MD and their family members actively involved in the business of the enterprise were the respondents for this study. Senior managers of the particular organization were also chosen to get responses regarding the use of ICT in the enterprise.

Sample Size

Data was collected from 110 small and medium scale enterprises out of which only 100 responses were considered for analyses the data. Rest 10 responses were ignored due to the inappropriate and non- serious responses. Purposive sampling was used to collect the data.

Data Analysis Techniques.

Independent sample t-test

T-test is used to determine whether there is significant difference between two sets of scores. Or if the data sets are from same population. T-test is parametric test which means we infer population based on sample size. Before t-test is performed, assumptions of t-test are checked.

Descriptive Statistics

Descriptive statistics are used to describe and explore main characteristics of the variables. Different measures of descriptive statistics are Mean, Standard deviation, and percentage

Statistical Package Used for Analysis

Statistical package used for data analysis was IBM SPSS version 22, Smart PLS (2.0), and MS Excel.

Data Analysis

To measure the current status and extent of ICT adoption in small scale industries 11 uses of ICT were identified and respondents were asked to rate them on five point scale from 1 to 5. 1 = not at all and 5= to full extent. Descriptive statistics was used to interpret the results. Higher score would suggest more use of ICT in medium and small scale enterprises. The interpretive guidelines used are – Extremely low use = 1 to 1.7; 1.8 to 2.5 = low use; 2.6 to 3.3 = average/moderate use; 3.4 to 4.1 = fair level of use; 4.2 to 5 = high level of use (Nduati, Ombui and Kagiri 2015).

Table 1.1 exhibits the results of descriptive statistics. Mean/average and standard deviation along with minimum and maximum were used to interpret the results. The average score indicated the overall extent of use of ICT. The ICT uses were then arranged from highest to lowest mean score.

E-banking ranged from 1 to 5 with an average score of 4.63 (SD = 0.706) was the highest or most widely used ICT tools. Small and medium scale industries used e-banking to the high level. At the second place was 'online payment to suppliers' with mean score of 4.16 (SD = 0.67) was also highly used. Email also ranged from 1 to 5, with an average score of 4.14 (SD = 1.119) was highly used ICT tool. Online receipt of payment from customer as ICT use also ranged from 1 to 5 with an average score of 3.94 (SD = 1.135) was fairly used. ICT was used for 'feedback from the customers' also ranged between 1 to 5 with average of 3.72 (SD = 1.074) suggesting a fair level of use. Website as ICT tool also ranged between 1 to 5 with average of 3.69 (SD = 1.52) suggested fair level of use. The use of ICT for online ordering from supplier also ranged between 1 to 5 with average of 3.50 (SD = 1.150) suggesting a fair level of use. Also ICT as a tool was used to the average extent for 'sourcing of general information' (3.33, SD = 1.264); 'Online sales to customer' (3.02, SD = 1.279); and 'government information' (2.81, SD = 1.316). ICT as a tool of social networking was used to low extent (2.71, SD = 1.057) by small and medium enterprises (Refer table 4.1).

Also, an overall composite score was computed through summing the responses on 11 uses of ICT and then dividing it by the number of uses (i.e. 11) to obtain an overall mean score. The overall mean score represented the combined use of ICT by small and medium scale industry. The overall average score ranged from 1.09 to 5.00 with an average of 3.60 (SD = 1.12), suggested that the use of ICT by small and medium scale industry was fairly used.

Table 1.1

Descriptive Statistics of ICT tools

ICT Tools	N	Minimum	Maximum	Mean	Std. Deviation	Remarks
E-Banking services	100	1	5	4.63	.706	Very High Use
Online payment to supplier	100	2	5	4.16	.677	Very High Use
Email	100	1	5	4.14	1.119	Very High Use
Online receipt of payment from customer	100	1	5	3.94	1.135	Fairly used

Feedback from customer	100	1	5	3.72	1.074	Fairly used
Website	100	1	5	3.69	1.522	Fairly used
Online ordering from supplier	100	1	5	3.50	1.150	Fairly used
Online sourcing of general information	100	1	5	3.33	1.264	Average Use
Online sales to customer	100	1	5	3.02	1.279	Average Use
Government information	100	1	5	2.81	1.316	Average Use
Social Networking	100	1	5	2.71	1.057	Low Use
Overall Extent of ICT Use		1.09	5.00	3.60	1.12	Low Use

Table 1.2 exhibits the descriptive statistics of use of different tools of ICT for small and medium scale enterprises. T-test was used to examine the significances of differences among different ICT tools in small and medium scale enterprises. Email, Website Online receipt of payment from customers and feedback from customer as ICT tool was found significant in medium scale enterprises as compare to small scale enterprises as p=.000 (p<.05).

Remaining tools of ICT were used by small and medium enterprises to the same extent as t-statistics were found to be non-significant (p>.05). Whatever the differences were there may be associated with chance and there were no true differences.

Descriptive Statistics of ICT tools by Small and Medium Scale Enterprises of Punjab using T test.

Table 1.2

Enterprise Type		N	Mean	Std. Deviation	Std. Error Mean	
Email	Small Enterprise	54	4.02	1.447	.197	.000
	Medium Enterprise	46	4.28	.502	.074	
Online sourcing of general information	Small Enterprise	54	3.43	1.207	.164	.583
	Medium Enterprise	46	3.22	1.332	.196	
Online ordering from supplier	Small Enterprise	54	3.46	1.224	.167	.125
	Medium Enterprise	46	3.54	1.069	.158	
Online payment to supplier	Small Enterprise	54	4.07	.797	.109	.059
	Medium Enterprise	46	4.26	.491	.072	
Online sales to customer	Small Enterprise	54	2.80	1.323	.180	.442
	Medium Enterprise	46	3.28	1.186	.175	
Online receipt of payment from customer	Small Enterprise	54	3.52	1.255	.171	.000
	Medium Enterprise	46	4.43	.720	.106	
Government information	Small Enterprise	54	2.67	1.346	.183	.841
	Medium	46	2.98	1.273	.188	

		N				
	Enterprise					
Feedback from customer	Small Enterprise	54	3.44	1.239	.169	.000
	Medium Enterprise	46	4.04	.729	.107	
E-Banking services	Small Enterprise	54	4.65	.805	.109	.693
	Medium Enterprise	46	4.61	.577	.085	
Website	Small Enterprise	54	3.30	1.849	.252	.000
	Medium Enterprise	46	4.15	.816	.120	
Social Networking	Small Enterprise	54	2.67	1.149	.156	.143
	Medium Enterprise	46	2.76	.947	.140	

2. To study the comparison of overall use of ICT in Small and Medium Scale Enterprises in Ambala Division of Haryana.

Small and Medium firms were included to examine the significant differences in the use of ICT among small and medium scale enterprises. In order to compare the overall use of ICT among small and medium scale enterprises in the Ambala division of Haryana following hypothesis was tested:

Alternate hypothesis (H_1) - overall use of ICT was not same among small and medium scale enterprises.

To examine the significance of difference in the use of ICT among two groups or types of firms, independent sample t-test was used. Table 4.3 exhibits the results of t-test. Results of table reveal that the average use of ICT among small and medium enterprise among Ambala division of Haryana was same not same as p = .007 was found to be significant (p<.05), suggesting that the use of ICT was significantly different among medium scale enterprises as compared to small scale enterprises. Therefore, alternate hypothesis was accepted.

Table 2.1

Comparative results of overall extent of use of ICT tools

	N	Mean	Std. Deviation	F	Sign	t	Sign.(2-tailed)
Small Enterprise	54	3.4562	.75017	18.702	.000	-2.77082337	.007
Medium Enterprise	46	3.7787	.37880				

Conclusions and Discussions

In this study, utmost efforts mere made to avoid any kind of biasness in selection of firms or respondents and efforts were made to cover all types of manufacturing firms of Haryana in ambala division so that the population is well represented and finding of the study could become more relevant. The majority of the

respondents were male, although few female businesswomen that was expected as female entrepreneurs are very less across all over the India as compared to male entrepreneurs. Regarding the use of ICT tools, most widely used tools were, e-banking, online payment to vendors, and a online receipt of payment and Email respectively. And in the lowest use category, the ICT tools were government information, and social networking. Overall combined use of ICT among small and medium enterprises of said division in haryana was fairly used. Overall extent of use of ICT was significantly different among medium and small scale enterprises (as suggested by the results of t-test). This could be due to rapid progress in the digitalization across the nations the use of ICT among small and medium scale enterprises is also improving day by day. It was also found in the results of the study that extent of use of all ICT tools among small and medium scale enterprises was almost same except the email, website, online receipt of payment from customer tools and feedback from customers.

Limitations of the Study

Most important limitation of the study was to contact the right person in the firm. Only the management level personnel were authorized to provide the information or someone actually using ICT tools, but with the permission of the management. The administrations of firms were in general quite skeptical about sharing the information. It was in general a mammoth task to convince them to provide the information. Many times the respondents did not show any interest. Monitory expenses and limited time was another constraint in the execution of the study.

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