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INFORMATION TECHNOLOGY: ADOPTION AND IMPLEMENTATION IN SMALL SCALE INDUSTRIES IN INDIA

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ABSTRACT

Small scale industries have significant role in Indian economy in terms of its contribution to production, employment and export. But, since 1991 small scale industries in India find themselves in an intensely competitive environment due to globalization, domestic economic liberalization and dilution of sector specific protective measures. The formation of World Trade Organization in 1995 also forced the member countries (including India) to scale down the restrictions on import. Information Technology (IT) is one of the significant factors, in the growth of small scale industries in India. A survey of 15 SSI units in the West Uttar Pradesh, India was conducted to know about the adoption and implementation of information technology in small scale industries in India. This paper analyzes the various factors influencing the implementation and adoption of information technology by small scale industries in India.

Keywords: Information Technology (IT), Small Scale Industries (SSI), Entrepreneurs,

Introduction

The development of small scale industries (SSI) has been one of the major plank's of India's economic development (Bala Subrahmanyam, 2005). Small-scale industries have vital role in Indian economy in view of its contribution to production, employment and export. In the year 2003-2004 there were 11.39 million small scale industries in India contributing 39.42% in total industrial production and 6.71 % in Gross Domestic Product (GDP) (Annual Report, Ministry of SSI, 2004-05). Small scale industry provide employment to about 27.14 million persons and contribute 35% of the total export form India (Annual Report, Ministry of SSI, 2004-05). However, since 1991 small-scale industries in India find themselves in an intensely competitive environment due to globalization, domestic economic liberalization and dilution of sector specific protective measures (Bala Subrahmanyam, 2005). The formation of World Trade Organization in 1995 also forced the member countries (including India) to drastically scale down the restrictions on import. Due to the increased competitive force in the globalize market place it is important for a small business to know their customers, have open lines of communication, provide quality service and offer competitive price to maintain market share (Lee and Maniam, 2007).

Small Scale Industries and Information Technology

Small scale industries play significant role in the economic development of India. However,

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the performances of small scale industries have declined in last few years. Literature study reveals that information technology is a significant factor which influences the growth of small scale industries. Information Technology can be used to create competitive opportunities for the organizations (Beheshti, 2004).

Role of Small Scale Industries in the Growth of Indian Economy

Small scale industries have significant role in the economic development of India. Today SSI sectors occupy a place of strategic importance in Indian economic structure due to its considerable contribution in terms of output, export and employment (Bala Subrahmanyam, 2005). In 2003-04 the growth rate of small scale industries were 8.6% and the growth rate of overall industrial sector was 6.9% (Annual report, 2004-2005, Ministry of SSI, Government of India). SSI has higher growth rate of production as compared to the overall growth rate of industrial sector (Table 1). Small scale industries have significant contribution to the total industrial production and Gross Domestic Production (Table 1). In the year 2003-04 the contribution of small scale industries in total industrial production was 39.42% and the contribution in Gross Domestic Product (GDP) is 6.71% (Annual Report, 2004-2005, Ministry of SSI, Government of India). Thus small scale industries have a significant role in the economic growth of India.

Table 1: Contribution of SSI to Indian Economy

Year	Growth rate of SSI sector (%)	Growth rate of rate of overall industrial sector (%)	Contribution of SSI in Total Industrial Production (%)	Contribution of SSI in Gross Domestic Product (GDP) (%)
1997-1998	9.2	6.7	39.70	7.02
1998-1999	7.8	4.1	39.94	6.81
1999-2000	7.1	6.7	40.02	6.69
2000-2001	8.0	5.0	39.91	6.86
2001-2002	6.1	2.7	39.63	6.67
2002-2003	7.7	5.7	39.48	6.82
2003-2004	8.6	6.9	39.42	6.71

(Source: Annual report, 2004-2005, Ministry of Small Scale Industries, Government of India)

Performance of Small Scale Industries

In spite of the significant contribution to the Indian economy the performance of the small scale industries have declined from 1980s to 1990s (Table 2). The compound average growth rate (CARG), which is the average of the growth rate in different years, of the number of SSI has come down to 5.62% in 1990s as compared to 8.40% in 1980s (Bala Subrahmanyam, 2005). Similarly, from 1980s to 1990s the compound average growth rate of employment has come down to 4.00% from 5.84% and output to 15.31% from 18.66% (Bala Subrahmanyam, 2005). Export is the only area of growth from 1980s to 1990s. The credit to SSI from banks has also decreased in last few years (Table 3). The credit to small scale industries was 14.6% of net bank credit in the end of March 2000 which gone down to 9.4% in the end of March 2005 (Annual Report, 2004-2005, Ministry of SSI, Government of India).

Role of Information Technology in the Growth of SSI

Information Technology has a vital role in the growth of small scale industries. Literature study is done to know the role of information technology in the growth of small scale industries (Table 4). Earlier research reveals that the adoption of information technology increases the efficiency of the organization. E-business have great potential for facilitating business transaction between small and medium size firms (Jeon et. al., 2006). Adoption of Information and

Communication Technology (ICT) increases the efficiency of the organization (Ritches and Brindley, 2005). Role of Information Technology in the growth of SSI is studied in different context which is given in Table 4.

Table 2: Growth of small scale industries: 1990 vs.1980s

Periods	Units*	Employment*	Output*	Exports*
1980s	8.40	5.84	18.66	19.38
1990s	5.62	4.00	15.31	20.62
1980-81 to 1985-86	9.18	6.21	16.88	11.00
1985-86 to 1990-91	7.63	5.47	20.46	28.40
1990-91 to 1995-96	6.88	4.02	18.05	30.42
1995-96 to 2000-2001	4.37	3.99	12.62	11.56

Note: *Figures represents the compound average growth rate (CARG) (%)
(Source: Bala Subrahmanyam, 2005)

Table 3: Flow of credit to the SSI sector from all public sector banks, since 2000:

Credit Parameters	At the end of march					
	2000	2001	2002	2003	2004(P)	2005(P)
Net bank credit(Rs. Million)	3164270	3412910	3969540	4778990	5588490	7187220
Credit to SSI (Rs. Million)	460450	484000	497430	529880	582780	676340
No. of SSI accounts(Million)	2.27	2.28	2.22	1.69	1.63	1.77
SSI credit as percentage of net bank credit	14.6	14.2	12.5	11.1	10.4	9.4

(Source: Annual report, 2004-2005, Ministry of small scale industries)

Table 4: Literature study for the use of information technology in the growth of SSI

Author	Objective	User Context	Conclusion
Wongpinunwatana, 2007	The use of IT in SMEs.	Study was based on the surveys with some SMEs in Thailand.	SMEs need to improve their efficiency by using information technology
Beheshti, 2004	Study of impact of IT for SMEs	Study was done in context with the SMEs of United States	IT can be used to create the competitive opportunities for the organizations.
Grandon and Mykytyn, 2004	Study the adoption of e-commerce in SMEs	Study was done for the SMEs of Chili.	The nature of e-commerce adoption and diffusion by SMEs in developing countries is an area of study.
Jeon et. al.,2006	Determining factors for the successful adoption of e-business by SME	Study was done in Korea.	E-business have great potential for small and medium size firms.

Study Design

Intensive literature study is done to identify the factors influencing the implementation and adoption of information technology by the small scale industries in India. These factors are listed in Table 5.

1. Government Support: It is the support by the government in the adoption and implementation of information technology in the small scale industries in India (Jeon et.al., 2006; Wymer and Regan, 2005).
2. CEO's knowledge of IT/e-business: This factor represents the knowledge of the CEO about the use of IT/e-business (Jeon et.al., 2006; Chahal and Kohali, 2006; Seyal and Rahman,

Table 5: Various factors influencing the implementation and adoption of information technology in SSI:

Sl. No.	Factors	Literature Support
1.	Government Support	Jeon et.al. (2006), Wymer & Regan (2005).
2.	CEO's knowledge of IT/e-business	Jeon et.al.(2006); Chahal & Kohali (2006); Seyal & Rahman (2003);
3.	Attitude of entrepreneur towards use of IT	Winston & Dologite (2002); Ihlstrom and Nilsson (2003); Caldeira and Ward (2003); Lee & Runge (2001); Seyal &Rahman (2003); Wymer & Regan (2005).
4.	Development of internal IT competencies	Caldeira and Ward (2003)
5.	Size of the organisation	Levenburg (2005);
6.	Organizational readiness and trading partner	Khazanchi (2005); Azumah et.al. (2005); Seyal &Rahman (2003).
7.	Financial Resource	Khazanchi (2005)
8.	External/ internal business and technological environment	Khazanchi (2005)
9.	Social expectation of information technology use	Lee & Runge (2001)

2003).

3. Attitude of entrepreneur towards use of IT: It refers to the positive or negative attitude of the entrepreneurs towards the use of information technology (Winston and Dologite, 2002; Ihlstrom and Nilsson, 2003; Caldeira and Ward, 2003; Lee and Runge, 2001; Seyal and Rahman, 2003; Wymer and Regan, 2005).
4. Development of internal IT competencies: IT competencies within the organization are also a factor in the adoption and implementation of information technology in the organization (Caldeira and Ward, 2003).
5. Size of the organization: This factor represent the small or big size of the organization.67% entrepreneurs say that since the size of the organization is small, therefore the requirement of the use of IT is also limited. Information technology has very limited role in small scale industries (Levenburg, 2005).
6. Organizational readiness and trading partner: It refers to the readiness of the organization and their trading partner for the adoption and implementation of information technology (Khazanchi, 2005; Azumah et.al., 2005; Seyal and Rahman, 2003).
7. Financial Resource: Availability of the financial resource is a factor towards the adoption and implementation of information technology (Khazanchi, 2005).
8. External/ internal business and technological environment: External/ internal business and technological environment influences the adoption and implementation of information technology by the SSI (Khazanchi, 2005).
9. Social expectation of information technology use: Expectation of the society influences the adoption and implementation of information technology in SSI (Lee and Runge, 2001).

A model is developed on the basis of the factors influencing the implementation and adoption of information technology by the small scale industries in India. This model is given in figure1.

Questions are prepared on the basis of the factors influencing in the adoption and implementation of small scale industries in India.These questions are asked through the personal interview to the entrepreneurs of the small scale industries operating in West Utter Pradesh,

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India. Personal interview is conducted to 15 entrepreneurs. Their responses are noted and analyzed.

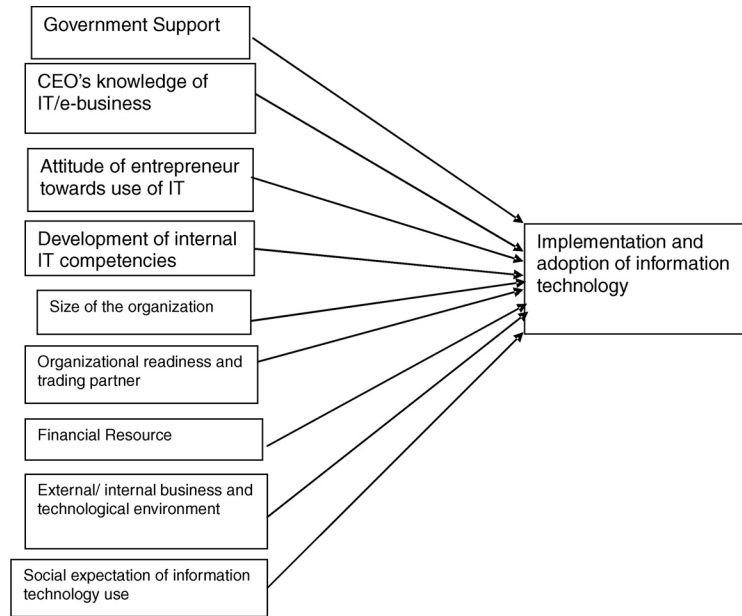


Figure 1: The factors influencing the adoption and implementation of information technology in small scale industries

Data Analysis

The factors influencing the adoption and implementation of information technology in the small scale industries are analyzed through the personal interviews of the entrepreneurs of West Uttar Pradesh, India.

Analysis of factors influencing the adoption and implementation of information technology in Small Scale Industries

The questions are asked to the entrepreneurs through the personal interview about the factor influencing the adoption and implementation of information technology by the small scale industries in India. The questions are asked to 15 entrepreneurs of the small scale industries in west Uttar Pradesh, India. Entrepreneurs have identified the reasons which influence the adoption and implementation of information technology by the small scale industries in India. These reasons are listed in Table: 6

1. Government Support: Very few (27%) entrepreneurs say that government support is a significant factor in the adoption and implementation of information technology. They feel that government support is insufficient for the implementation and adoption of information technology.
2. CEO's knowledge of IT/e-business: 33% entrepreneurs feel that knowledge of IT/e-business is a factor towards the implementation of information technology in small scale industries.
3. Attitude of entrepreneur towards use of IT: Maximum number (80%) of entrepreneurs feels

Table 6: Various factors influencing the implementation and adoption of information technology in SSI:

Sl. No.	Factors	Responses	Percentage
1.	Government Support	4	27
2.	CEO's knowledge of IT/e-business	5	33
3.	Attitude of entrepreneur towards use of IT	12	80
4.	Development of internal IT competencies	5	33
5.	Size of the organisation	10	67
6.	Organizational readiness and trading partner	9	60
7.	Financial Resource	10	67
8.	External/ internal business and technological environment	8	53
9.	Social expectation of information technology use	3	20

that their attitude towards the use of IT is a factor for the adoption and implementation of information technology.

4. Development of internal IT competencies: 33% entrepreneurs feel that lack of internal IT competencies is a reason for the low implementation of IT in small scale industries.
5. Size of the organization: 67% entrepreneurs say that since the size of the organization is small, therefore the requirement of the use of IT is also limited. Information technology has very limited role in small scale industries.
6. Organizational readiness and trading partner: Many (60%) entrepreneurs feel that lack of organizational readiness for the use of information technology and integration of IT with the trading partner is a factor in the implementation of information technology in small scale industries.
7. Financial Resource: 67% entrepreneurs say that financial deficiencies are the roadblock in the adoption and implementation of information technology.
8. External/ internal business and technological environment: 53% entrepreneurs say that external and internal business and technological environment is a factor in the adoption of information technology.
9. Social expectation of information technology use: Very few (20%) entrepreneurs say that social expectation of information technology use is a factor in the adoption and implementation of information technology in small scale industries.

Discussion and Recommendation

Small scale industries have significant role in the growth of the Indian economy. But the performance of small scale industries has declined in recent years. Literature study reveals that information technology is a significant factor in the growth of small scale industries. Through the literature factors are identified which influence adoption and implementation of small scale industries in India. On the basis of these factors the personal interview was conducted to the entrepreneurs of the West Utter Pradesh, India. The interview of 15 entrepreneurs was conducted. Maximum number (80%) of entrepreneurs, who were interviewed, say that attitude of the entrepreneur towards the use of information technology is a significant factor towards the adoption and implementation of information technology in small scale industries in India. Apart from this size of the organization, financial resource and organizational readiness and trading partner are also the major factors which influence the adoption and implementation of information technology. On the basis of the interview conducted of the entrepreneurs the

following recommendations are given to the entrepreneurs:

1. Entrepreneurs of the small scale industries should change the attitude towards the adoption and implementation of information technology.
2. Separate budget should be allocated for the implementation of information technology in the organization.
3. Small size of the organization should not be the reason for the low implementation of information technology in the organization.
4. Information technology can give true benefit to the organization only if all the business partners are using it.

Conclusion

Small scale industries have significant role in Indian economy in terms of production, employment and export. But after globalization the performance of small scale industries have come down. Information technology has significant role in the growth of small scale industries. Through the literature study factors are identified which influence the implementation and adoption of small scale industries in India. It was found through the personal interview of the entrepreneurs in West Uttar Pradesh, India that out of many factors which influence the adoption and implementation of information technology in small scale industries in India attitude of the entrepreneur is a significant one. Size of the organization, financial resource and organizational readiness and trading partner are also the major factors which influence the adoption and implementation of information technology in SSI. It is recommended to the entrepreneurs that they should change their attitude towards the adoption and implementation of information technology in small scale industries.

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