

## Impact of Information Technology on Management in Small and Medium Industries

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### Abstract

The impact of information technology on better management in small and medium industries was studied in the present paper. This research was a causal study which aimed to find answer to the question that whether the use of information technology can affect the management of small and medium industries or not or, in other words, whether the use of information technology leads to a better management in small and medium industries or not. Statistical population included small and medium manufacturing industries and the sample members were selected by random sampling. The required data and information were collected by handing out a questionnaire among the participants and statistical analyses were done in SPSS17. The results showed that information technology affects the accessibility of new tools of marketing for small and medium industries.

**Keywords:** Information technology; Management; Small and medium industries

### Introduction

Generally, new technologies had a great impact on all aspects of life and the global society and economy is undergoing a fundamental transformation [1]. The present society is changing and is becoming “knowledge society” [2]. This is more dependent on new technologies, with a new economy or “knowledge economy”, where knowledge and information are essential and the key factor of production. In this, the ideas, processes, knowledge and information are growing share of trade in the knowledge economy. In the information society, environment successful enterprises produce high technology goods and services and transform human effort, materials and other economic resources into product and services that meet customers need [3].

According to European Commission [4], small- to medium sized enterprises (SMEs) are those companies which have the number of employees up to 250 people and a maximum annual turnover of 50 million euro. The importance of SMEs today is undeniable both for developed and developing countries [4].

Previous studies on the management of small and medium industries suggest that even management functions such as planning, organizing, staffing, directing, and controlling are not done properly in many of such industries. In many small and medium industries, financial management is very poor, decision are taken with delay, amenities and retirement facilities are not provided for workers, and there is not definite planning for production. All these factors put obstacles to the path of growth and development of small and medium industries.

Lack of sufficient knowledge and experience of managers, failure in selection of the staff on the basis of meritocracy, non-dedication of responsibilities to members, insufficient commitment of managers and lack of access to information, failure in proper processing of information, and so on are the major reasons for these barriers.

Information technology (IT) can overcome many of the barriers to the management of an organization. CRM, CIM, CAD, CAM, ERP, and BI are of tools which can help the managers in their managerial duties.

### Previous Studies

Globally, information technology has become a key element in economic development of many countries in the world. Various methods have been used for assessing the impact of information technology on small and medium industries. Some of the studies conducted on this subject are as follows:

Montgomerie defines information technology as the handling of vocal, pictorial, textual and numerical Information by means of micro-electronic based equipment in computing and telecommunication. This clearly brings about the advantages of information delivery through technological means, since almost all aspects of office work can adequately be taken care of [5].

The findings of a study entitled “Mapping by using ICT in small and medium industries in Jamaica” indicated that the use of IT has improved the delivery service, communications, and sales of goods and services and thereby improved performance of the studied organizations.

Aronu defines Information Technology as the combination of two technologies, computing and the main purpose of which is to transmit representation of information signals between remote locations [5].

Halimaton examines effects of new office technology on secretaries' attitudes in the UK and Malaysia. Despite research studies on the impact of this technology, there has been a lack of empirical evidence on secretaries working patterns, interactions and communication, and specifically how new office technology has changed working practices in the culture of offices [6].

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- The results of a study entitled “The impact of IT on the business communities; Case study: small and medium industries in Bangladesh” showed that the use of IT by small and medium industries of Bangladesh has led to better performance of organizations.
- Irechukwa, itemized banking services that have been changed via the use of information technology as including opening an account, mandate on customers account, and transaction processing and recording [7].
- During the growth of a competitive global environment, there is considerable pressure on most organizations to make their operational, tactical, and strategic processes more efficient and effective. An information system (IS) is a group of components which can increase competitiveness and gain better information for decision making. Therefore various organizations have chosen to apply this group of components to their associations [5]. Consequently, the organizations decide to implement IS in order to improve the effectiveness and efficiency of the organizations. Information systems have become a major function area of business administration. The systems, nowadays, plays a vital role in the e-business and e-commerce operations, enterprise collaboration and management, and strategic success of the business [8].

## Methodology

Three main concepts of this study were defined:

### IT

Technology helps companies transform themselves and grow their business. Bain helps clients that are embarking on major growth or change that is heavily technology-dependent to identify the optimal future state of IT, aligned with business needs, and then jointly develop an implementation blueprint [9].

**Small to medium sized enterprises:** SMEs are those companies which have the number of employees up to 250 people and a maximum annual turnover of 50 million euro [4].

### Management

In businesses and organizations is the function that coordinates the efforts of people to accomplish goals and objectives using available resources efficiently and effectively. Management includes planning, organizing, staffing, leading or directing, and controlling an organization to accomplish the goal. Resourcing encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources [10].

Statistical population included all small and medium industries of Iran. Sample size was determined by Morgan Table to be 380. In order to increase the validity of research, 400 companies were selected as the sample using random sampling.

Table 1 is a part of Morgan’s sampling table which is brought because of this research’s necessity.

The required data and information were collected by an author-made questionnaire. In order to evaluate the validity of this questionnaire, it was distributed among 30 members of the population which had not been selected as the sample. The reliability of the questionnaire was also confirmed by Cronbach’s alpha. Since the calculated alpha coefficient was more than 60%, no item of the questionnaire was eliminated.

Sample	Population	Sample	Population	Sample	Population
375	15000	254	750	108	150
377	20000	260	800	113	160
379	30000	265	850	118	170
380	40000	269	900	123	180
381	50000	274	950	127	190
382	75000	278	1000	132	200

Table 1: Morgan's sampling table.

Cronbach's Alpha	Count
0.747	4

Table 2: Validity situation of research tools.

Management	Number	Mean	Standard deviation	Standard error of mean
	385	3.621	0.7107	0.0352

Table 3: Measures of central tendency and dispersion distribution.

For defining the questionnaire validity, 30 persons had been selected from the organizations which weren’t in the sample and it asked from them to complete the questionnaire. Then the questions’ the coefficient alpha reliability had been evaluated and considering to this point that the reliability coefficient was more than 60, no question had been deleted and all of the questions were used in the research. The amount of  $\alpha$  is 74.7.

Table 2 shows a report from the validity situation of research tools.

It should be noticed that the received data from 30 coded companies had been entered to SPSS 17 software and the output is brought in Tables 3 and 4 briefly.

For defining the validity the questionnaire has given to some experts and the professors and the content of each question asked from them and finally it confirmed.

The questionnaire was sent to and received from the sample member via email. 385 of returned questionnaires were acceptable to be used for further analyses. The questionnaire’s items were coded and inserted in SPSS17.

Normality of data was tested by Kolmogorov-Smirnov test. The results of this test showed that data had a normal distribution, so descriptive statistics were used for testing the hypotheses.

The results of analyses in SPSS17 are as follows in Table 3 and Figure 1.

For testing the hypotheses, we assumed that if the average of data obtained from questionnaire was equal to 3 or more, the above hypothesis was confirmed.

$$H_0: \mu - 3 = 0$$

$$H_1: \mu - 3 \neq 0$$

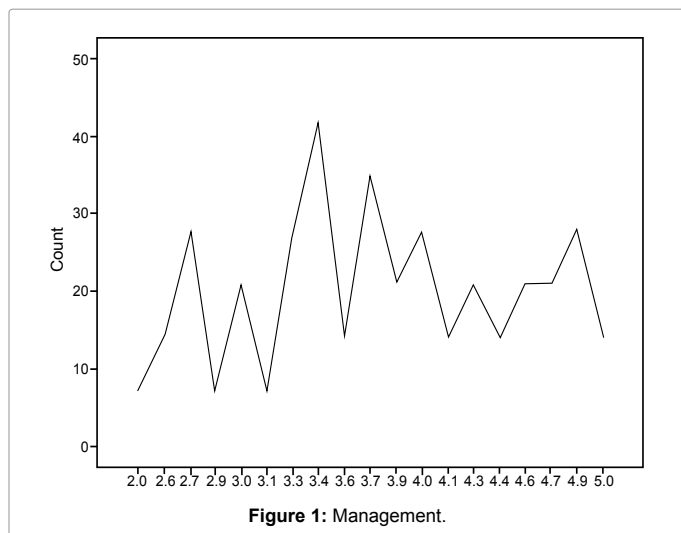
According to Tables 2 and 3, mean value of the impact of information technology on small and medium industries is significantly more than 3 and the calculated t-value is more than 0 at a significance level 95%.

## Results

The required information and the results of analyses confirm the study hypothesis. This means that the use of information technology leads to a better management in small and medium industries. This is very valuable for such industries, because it causes acquisition of competitive advantage, organizational development, appropriate

	Test Value=3					
	t-value	Degree of freedom	P-value of both sides	Mean difference	Level of confidence (95%)	
					Lower limit	Upper limit
Management	20.107	384	0	0.7416	0.689	0.862

Table 4: One-sample test.



reaction against competitors, proper use of the opportunities and threats, and identification of strengths and weaknesses. The results of the present study are consistent with the statement of the World Summit on the Information Society held in Geneva in 2003 and Tunis in 2005 on the introduction of the benefits of information technology in small and medium industries.

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