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**KNOWLEDGE AND INFORMATION TECHNOLOGY AS A STRATEGIC  
PARAMETER IN FINANCE AND ECONOMIC DEVELOPMENT  
(CASE STUDY: IRAN INDUSTRIAL DEVELOPMENT INVESTMENT CO.)**

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**ABSTRACT**

The growing process of development of information technology requires careful and scientific planning for social user. Due to weak economic conditions in many developing countries, the need for attention to its economic implications is a special topic which is taken into consideration by experts and implementers of development programs. On the other hand, given the role of the index of investment return on financial decisions and effectiveness of financial, information technology is important issue that can play an effective role in the attitude and willingness of enterprises to its develop. This study examines the relationship between information technology and financial performance and production strategies. IT as independent variables is measured using a questionnaire including 26 questions and production strategies (cost, quality, innovation and flexibility) are measured using a questionnaire including 14 questions. To collect data related to financial performance (profitability ratio and activity ratio), information about subset Companies of Iran Industrial Development Investment Co are used. After questionnaires distribution, 40 questionnaires were considered in the study. The data results showed that all

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six factors of cost, quality, innovation, flexibility, and the profitability ratio and activities ratio have a direct and significant relationship with IT.

**Keywords: information technology, knowledge management, financial performance, production strategies**

## INTRODUCTION

A prominent feature of the present era is the rapid changes in the various dimensions of communities. The changes from the Renaissance to the present century, in all fields as scientific have penetrated. Due to the advancements made in the field of microelectronics, these changes have revolutionized aspect, and information technology is considered the engine of these changes (1). We live in the information era, the era which in it the ability to generate and access to the new information has become a key factor in economic and social development. Improve economic and social conditions of countries, largely depends on the production capability and knowledge. Information literacy means knowing how the data are made, how they are used and how are transformed. Marks of new era (information era) are everywhere: Personal computers, two-way communication, global communication networks (Internet), electronic publishing, digital libraries, and son on. Statistics suggest that the amount of information produced in the last decade is more than information produced in the past

millennium (2). Power and performance capability of information technology is growing rapidly over time. In fact, it can be said that information technology have outstripped in development of other technologies and industries. IT in different types, along with a variety of information systems that are designed for different requirements, has been widely used. IT enables managers establish a better relationship with the organization, the environment and each other. Greater participation in decision making, increase decision-making speed, increase speed identify problems, reducing the height of the organization pyramid, improving coordination and increasing Specialist staff are just some of the effects of information technology and information systems on some kinds of organizations (3).

## Research Background

BARADWAJ and colleagues in an analysis of the relationship between IT and financial performance have been defined Tobin's Q as a measure of financial performance and total investment ratio on the IT to total sales as a variable IT. In this study, the

relationship between these variables in 1989 and 1993 have been examined and the relationship between two variables in all years is estimated as significant and positive (4). DOLATSHAHI and King also in evaluation of the impact of information technology and the degree of virtualization of organization on its business performance have been estimated this impact on all industries as positive. Moreover, they argue that the fit between information technology and the virtual organization, increases this effect (5). Therefore, research in information technology and firm performance, as well as a feedback to improve the company's performance, and also in user development of information technology in other developing companies is so important (6, 7). Therefore, the fundamental question in this study is examination of the relationship between IT and financial performance of investment and stock companies. To do this, try that with examination of a set of different factors that are considered internal and external investigations, the main research question to be answered.

### **3 - Information Technology**

Information Technology is the science that studies specifications and how information of governing forces on the flow of information and them preparation

tools to maximize access to information preparation and make usable it. Prepare of information includes separation of detailed information, scientific and documented, collection, organization, storage, retrieval, analysis, dissemination and use of it (8). Information Technology is defined as an interlocking set of procedures, hardware, software, and communications equipment that collects, storages, Processes, transfers or offers information in various forms (audio, video and text) (9). IT is a type of technology in which data, information and knowledge transfer is done. This concept is not necessarily dependent on computers, but today computers as a tool to develop and build highly powerful ways in doing things. Mapping, analytic geometry, copiers, telegraph, telephone, fax, etc., are good examples of information technology. (8). Three main pillars in information technology are hardware, software, and knowledge Management. In general, with creating this field, computer science was faced with megatrend, while information technology is the master computer science and has independent position (10). Now, IT is changing with increasing speed and these changes in all areas of economic, social and cultural rights are evident. However, for the expression of

other simple definition, the IT is divided into three words:

Technology: Making applicable science;

Process: management on information;

Information: data processed.

Some people also believe that IT consists of four main elements, man, mechanism, tool, structure, as that in this technology, information flows through value chain which is created the interconnection of these elements, and lead to the development of the organization. In this definition, the basic elements of information technology are mechanism, tool and structure which are described in the following (9).

Man: Human resources, ideas and thought, innovation;

Mechanism: rules, regulations and procedures, mechanisms of improvement and growth, valuation and financing mechanisms;

Tool: Software, Hardware, Network and Communications;

Structure: organizational, Organizational learning, global

ESLISER and colleagues have defined IT as an umbrella which includes a large number of hardware and software and services used to collect, store, retrieve and transmit information (11). IT employment history dates back to the decades of 40 and 50 AD that companies

such as General Motors were used IT for systems related to the personnel and payment of salary. It should be noted that these systems very rudimentary (12). IT transfers skill of thinking and systematic acting to the person. Systematic thinking means individuals have the ability to understand this point that the different functions of the organization are linked to each other and change in each of these sectors will inevitably affect other sectors. Infrastructure such skill is having systematic thinking that is created and developed through technology. In other words, understanding the logical relationships among data, person would be equipped logical thinking and would be obtained understanding power of relations between information and components.

#### **4 - Information technology and knowledge management**

Knowledge management is far more than just technology, but of course, knowledge technology is part of knowledge management (13). Some people believe that Knowledge management is a part of information management which over time has adherents less than before and given the hierarchy of data (information) knowledge and the importance and role of each of them, and the other hand, unsuccessful experiences which are

obtained in relation to information management regardless of organizational culture and structure (12). However, it should be noted that the concept of knowledge management without technologies based on knowledge will have very limited capabilities. The maximum value of technology in knowledge management is increasing availability to knowledge and simplifying and expediting the transfer of knowledge. About why KM needs IT and uses it, can be noted three general and major reasons:

Potential capabilities of information technology to facilitate and accelerate the learning process, its capabilities in management of the complexity of the issues and issues of Knowledge management, and also in informing assessment of learning needs which knowledge management needs them for doing its practices (11). The concept of organizational knowledge management can be created Fuller understanding of knowledge management, and its elements and its relation to the technology. Organizational knowledge management system is a system that improves organizational learning process by facilitates the exchange and dissemination of knowledge (14). This system is a complex combination of IT infrastructure, organizational structures, organizational

culture, knowledge and people. IT infrastructures are IT tools including hardware and software and protocols which provide the possibility of electronic versions from institutional knowledge and facilitate the exchange and transfer of knowledge. Organizational structures is the manner in which staff within teams and organizational groups either formal or informal manner are organized and interact with each other and follow a series of roles and goals in connection with the organization's strategy (12). Many technological have contributed considerable of advances knowledge management tools, which we can explore artificial intelligence and intelligent agent's knowledge base  $\rightarrow$  named. Amongst them we can be pointed out artificial intelligence, intelligent agent and the knowledge discovery in databases. These technologies make possible data functions, Extensible Markup Language of modern knowledge management systems and provide appropriate area for future initiatives in the field of knowledge management. To meet the needs of knowledge management of an organization, there is need to integration of communication technology and cooperation technology and storage and retrieval technologies. The first knowledge management systems with existing IT in

the market are made and were developed by network technology and common processing tools and databases. Some organizations developed their systems through an integration of set of tools belongs to one or more vendors and some organizations used three types of technologies in the architecture of its knowledge. Early in the first decade of the twenty first century, knowledge management technology evolved and converted three mentioned components into a single package. This unit single package considers the following potential and capabilities for information technology:

**Production of Information:** New innovations in information technology or with access to high-speed networks the possibility of produce and manage large amounts of information according to users' needs and goals of development.

**Provide opportunities of production:** Information technology increases the opportunities of production for producers.

**Support sharing of scientific and technical knowledge:** Using information technology plays an important role in performing scientific and technological research.

**Changing economic and social norms:** Gradually that people apply information and communication technology, business,

social and cultural norms and values of them change. For example, the speed of communications and doing electronic analysis leads to increase the speed of decision making (15).

When IT is used in organizations, expertise and capabilities of information technology Staff as a key factor in success, implementation and maintenance of these systems, especially systems related to knowledge management systems have been identified (12). As many scholars have stressed, the characteristics of mechanize of information technology system in knowledge management is the most important function (16). DOLIYON and that Mahler believe that such function of mechanize includes data that is collected automatically, is produced, is summarized, is published, in become into a specific format in order to meet different requirements, is analyzed, is stored or is restored. In addition to a large degree, be examined with a high rate (17). Due to the fact that, working of KM day by day and increasingly are being faced with more demand and the environment is constantly changing,

Many researchers according to them experience, suggest that ease of updating and ease of changing in systems is one of the most important considerations in the design and implementation of these

systems. Weill and Ross argue that the key factor to maintain the flexibility of the systems depends on organization's IT infrastructure design and it needs Foresight in creating the appropriate infrastructure in the right time in order to create the conditions for rapid business innovation, particularly in the field of information technology (18). Also, obviously, creating and existence of good infrastructures based on information technology help the success of knowledge management and is considered as a very convenient tool for knowledge management. However, it is certain that, integrating of structure - technology – human occurs in order to achieve organizational goals (10). Over the years, researchers and professionals have encouraged organizations to agree and accept the idea about such IT Management thinking as follows: "to create even when you can buy".

Under heavy competition conditions, vendors of knowledge management systems and software began to design systems and applications which will be stronger, cheaper, easier and useful function for professional and institutional brokers day to day. Furthermore, they began to design software that can be compatible with all management needs and has power matching with all of them (19). Information technology provides the

possibility of extracting knowledge from mind of knowledge owner, then, it can be embedded knowledge in the systematic forms on technology and transferred other internal members and business partners of organization in world. Technology helps encoding knowledge, and sometimes helps its creation, but in addition to the role of information technology as factor of knowledge sharing, the use of appropriate technologies in the organization can contribute significantly to the preservation and documentation of explicit knowledge, otherwise, much of the knowledge generated can be lost (20).

### **5 - Investment Company of Iran industrial development**

Iran's Industrial Development Investment Company (LLP), with cooperation 50 Economic Institute in county (including four large banks), as founders and finally 290 thousand shares through underwriting public with initial capital 352 billion RIALS on 31 August 1996 has been established and has been registered in the Companies Registration Office and the intellectual and industrial property in Tehran, its number is 126,857. The company began its activities in the field of industry, commerce, buying and selling parts of stocks and other securities in May 1999, less than three years was accepted in Tehran Stock Exchange.

The initial capital of this company was 352,000 million RIALS, with the approval of the extraordinary general meeting of shareholders in January 1999 had reaches to 376,200 million RIALS from the reserves and in January 2003, it has reached 580,800 million RIALS from receivables and cash from shareholders and has reached 755,040 million RIALS on 4 January 2005 from cash and receivables and has reached 906,048 million RIALS from receivables and cash on 2010 and has reached 976,048 million RIALS from cash and receivables on 2011 means 70,000 million RIALS has increased.

### **5-1 - The subject of company activity**

Early establishment, the subject registered for company officially activity according to the statute, has been frequency range and includes commercial and manufacturing and investment issues. But in 2009, the Tehran Stock Exchange has approved the company's statute change into its standards statute developed and new statute for the subject of company activity consists of two main parts as follows has been registered.

#### **A – The subject of main activity:**

The Subject of company activity, in accordance with Article 2 of the Statute, including buying, selling and investing in securities with Compliance with the

regulations of the Securities and Exchange aimed at obtaining profit without trying to control the investment company's operations.

#### **B – The Subject of subsidiary activities of the company:**

1. Investment in physical assets, production and construction projects, precious metals, certificate of bank deposits and investment deposits with banks and financial institutions and major credit;
2. Providing Securities markets and financial Institutions services after the approval or licensing by Tehran Stock Exchange including:
  - Accepting in the investment funds, land funds, Building of risky funds and other financial institutions
  - Financing handling market of securities;
  - Participation in underwriting commitment in securities;
  - Ensure liquidity, the principle or least interest of securities;
3. Investment and participation in financial institutions establishment, stock exchange and the markets of out of stock exchange.

### **RESEARCH METHODOLOGY**

Present study in terms of purpose is applicable study, because used the existing

scientific context and evaluates organizational required issues. Also, in terms of method, it is non-experimental descriptive - analytical. It is descriptive because it uses a tool of the questionnaire it is analytical, because in addition to characterize the status quo, tests hypotheses in terms of relationships based on prediction. The statistical population is subset Companies of Iran Industrial Development Investment Co which through simple random sampling, 40 questionnaires were distributed among the companies that have the highest stock. It should be noted that in this study, two types of questionnaires were used to collect data. IT as independent variables are measured with a questionnaire includes 26 questions and production strategies (cost, quality, innovation and flexibility) were measured using a questionnaire includes 14 questions. Both questionnaires have been scientifically validated questionnaires (questionnaires Wilson, Bateman and VIGHAM, version 2002) which to assess its reliability, CRONBACH's alpha was used which them extracted value were 0.9, 0.891, which indicates a high reliability of questionnaires.

### **7- Research Hypotheses**

According to identified effective components in the search literature and

questionnaire used, six hypotheses are presented below:

First hypothesis: there is positive and significant relationship between IT and profitability ratios.

Second hypothesis: there is positive and significant relationship between IT and activity ratios.

Third hypothesis: there is positive and significant relationship between IT and costs.

Fourth hypothesis: there is positive and significant relationship between IT and quality strategy.

Fifth hypothesis: there is positive and significant relationship between information technology and flexibility strategy.

Sixth hypothesis: there is positive and significant relationship between information technology and innovation strategy.

### **Hypothesis Test**

In order to compare variables, being normal of variables by KOLMOGOROVE-Smirnov test for normality must be examined. If they are normal, the t-test should be used to evaluate research hypotheses. KOLMOGOROVE -Smirnov test results, which indicate that variables are normal, as shown in the following table:

**Table 1: Results of KOLMOGOROVE -Smirnov test for normality of distribution of variables**

Variables studied	Number	Test Statistics	P value	Test result
Profitability ratios	40	1.109	.171	It is Normal
Activity Ratios	40	.744	.637	It is Normal
Costs	40	.524	.947	It is Normal
Quality Strategy	40	.835	.488	It is Normal
Flexible strategy	40	.514	.954	It is Normal
Innovation Strategy	40	.551	.921	It is Normal

Given the above table, it is observed that the P value obtained for evaluation normal data, in two groups in all cases, it is greater than 0.05, and the normal distribution of data is accepted. Now we can use the t test to test the hypothesis:

**First hypothesis: there is positive and significant relationship between IT and profitability ratios.**

Given that, variable of profitability ratios is normal, so in order to comparison average of this variable with constant number 3, we use the one-sample t-test:

**Table 2: Results of one-sample t test of Profitability ratios**

Number	Average	Standard deviation	T statistics	Degrees of freedom	P value	95% confidence interval for the average difference and the number 3
40	2.2071	.61176	-6.079	39	0.000	(-1.06 , -.052)

According to the results listed in the table above, it is observed that the average of this variable is 2.207 and the P value obtained for comparison with this average with 3 number is less than 0.05, Therefore, the hypothesis H0 based on the lack of mean difference with number 3 is rejected and according to the confidence interval obtained, can be said that the mean significantly is less than 3; So, first

hypothesis is confirmed with 95% confidence.

**Second hypothesis: there is positive and significant relationship between IT and the activity ratios.**

Given that, variable of activity ratios is normal, so in order to comparison average of this variable with constant number 3, we use the one-sample t-test:

**Table 3: Results of one-sample t test of activity ratios**

Number	Average	Standard deviation	T statistics	Degrees of freedom	P value	95% confidence interval for the average difference and the number 3
40	2.3712	0.67638	-4.360	39	0.000	(-0.92 , -0.32)

According to the results listed in the table above, it is observed that the average of this variable is 2.37 and the P value obtained for comparison with this average with 3 number is less than 0.05, Therefore, the hypothesis H0 based on the lack of mean difference with number 3 is

rejected and according to the confidence interval obtained, can be said that the mean significantly is less than 3; So, first hypothesis is confirmed with 95% confidence.

**Third hypothesis: there is positive and significant relationship between IT and costs.**

Given that, costs variable is normal, so in order to comparison average of this variable with constant number 3, we use the one-sample t-test:

**Table 4: Results of one-sample t test of costs**

Number	Average	Standard deviation	T statistics	Degrees of freedom	P value	95% confidence interval for the average difference and the number 3
40	2.6429	0.75561	-2.217	39	0.038	(-0.69 , -0.022)

According to the results listed in the table above, it is observed that the average of this variable is 2.64 and the P value obtained for comparison with this average with 3 number is less than 0.05, Therefore, the hypothesis H0 based on the lack of mean difference with number 3 is rejected and according to the confidence interval obtained, can be said that the mean significantly is less than 3; So, first

hypothesis is confirmed with 95% confidence.

**Fourth hypothesis: there is positive and significant relationship between IT and quality strategy.**

Given that, variable of quality strategy is normal, so in order to comparison average of this variable with constant number 3, we use the one-sample t-test:

**Table 5: Results of one-sample t test of quality strategy**

Number	Average	Standard deviation	T statistics	Degrees of freedom	P value	95% confidence interval for the average difference and the number 3
40	2.4015	0.55075	-2.217	39	0.038	(-0.84 , -0.35)

According to the results listed in the table above, it is observed that the average of this variable is 2.401 and the P value obtained for comparison with this average with 3 number is less than 0.05, Therefore, the hypothesis H0 based on the lack of mean difference with number 3 is rejected and according to the confidence interval obtained, can be said that the mean significantly is less than 3; So, first

hypothesis is confirmed with 95% confidence.

**Fifth hypothesis: there is positive and significant relationship between information technology and flexibility strategy.**

Given that, variable of flexibility strategy is normal, so in order to comparison average of this variable with constant number 3, we use the one-sample t-test:

**Table 6: Results of one-sample t test of flexibility strategy**

Number	Average	Standard deviation	T statistics	Degrees of freedom	P value	95% confidence interval for the average difference and the number 3
40	2.3485	0.66251	-4.613	39	0.000	(-0.94 , -0.35)

According to the results listed in the table above, it is observed that the average of this variable is 2.34 and the P value obtained for comparison with this average with 3 number is less than 0.05, Therefore, the hypothesis H0 based on the lack of mean difference with number 3 is rejected and according to the confidence interval obtained, can be said that the mean significantly is less than 3; So, first

hypothesis is confirmed with 95% confidence.

**Sixth hypothesis: there is positive and significant relationship between information technology and innovation strategy.**

Given that, variable of innovation strategy is normal, so in order to comparison average of this variable with constant number 3, we use the one-sample t-test:

Table 7: Results of one-sample t test of innovation strategy

Number	Average	Standard deviation	T statistics	Degrees of freedom	P value	95% confidence interval for the average difference and the number 3
40	2.5170	0.66737	-3.394	39	0.003	(-0.77 , -0.187)

According to the results listed in the table above, it is observed that the average of this variable is 2.51 and the P value obtained for comparison with this average with 3 number is less than 0.05, Therefore, the hypothesis H0 based on the

lack of mean difference with number 3 is rejected and according to the confidence interval obtained, can be said that the mean significantly is less than 3; So, first hypothesis is confirmed with 95% confidence

Table 8: Output related to hypotheses test and to compare them One-Sample Test

	Test Value = 3					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Profitability ratios	-6.079	39	.000	-.79293	-1.0642	-.5217
Activity Ratio	-4.360	39	.000	-.62879	-.9287	-.3289
Costs	-2.217	39	.038	-.35714	-.6922	-.0221
Quality Strategy	-5.097	39	.000	-.59848	-.8427	-.3543
Flexibility strategy	-4.613	39	.000	-.65152	-.9453	-.3578
Innovation Strategy	-3.394	39	.003	-.48295	-.7788	-.1871

**CONCLUSION**

In today's information society, access to knowledge in the success of many organizations is considered a critical issue. Development of information technologies has increased greatly the share of employment knowledge and information

globally. Currently, knowledge as intellectual capital is a valuable asset of an organization that with IT can play an important role in success of organization. Today, in every organization, IT issues and information systems are on the board of director agenda of organization. It is

natural that methods based IT in providing services to users, is more economical than traditional methods. Hypotheses tests through questionnaire tool indicated all hypothesis were confirmed, therefore indicated all six components influencing of cost, quality, innovation, flexibility, the activity ratio and profitability ratio on IT in subset Companies of Iran Industrial Development Investment Company. Finally, it is suggested future researches to be tested in order to evaluate the generalizability of this research findings, their validity in other organizations and companies offering securities.

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