



## Information Technology for Project Cost Management (Case study: Soufian Cement Co, Iran)

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### ABSTRACT

In today's competitive world, reduction of production costs has become one of the corporates priorities. Survival triangle (cost, quality and time) is the solution that helps companies focus on these three dimensions and have the ability to compete with other companies. Cost management is the first step in this way that providing solutions and advice to managers who need help to have a precise estimate of the costs and enable them to control costs in the anticipated budget framework. The main objective of this research is the evaluation of relationship between information technology and project cost management from viewpoint of Soufian Cement Co executives. According to statistical population of research encompasses all company managers (n= 35), the sampling method that used is census-type and depending on the nature of the topic, a researcher-made questionnaire method (Cronbach's alpha coefficient was 88% for IT questionnaire and 81% for project cost management questionnaire) used for data collection. Preliminary results showed that the level of usage of information technology and project cost management in the company is moderate. Due to normality of all the data, Pearson correlation coefficient test was used for data analysis. The overall results showed that there is a significant relationship between information technology and project cost management, but there is no possibility to control costs by using information technology.

### Keywords:

cost reduction, information technology, PMBOK Standard, project cost management, survival triangle.



## 1. Introduction

In today's competitive world, the proper decisions is the result of accessing managers to timely, accurate information. Organizations to conduct business, trade or production missions need to use IT systems for rapid access to updated and accurate information. Accordingly, in order to create these systems, facilitate and accelerate projects, for performance improvement in planning, design, implementation and control of project operations with the use of IT systems based on project objectives and in the frame work of cost, time and quality are the main priorities of organizations.

In the international competition of current century, the emergence of technology and information systems has led companies to the revision of their obligations to create advantage in manufacturing. Considering the following factors will help companies to reach a global level: Increased focus on introducing new products, increased attention to product quality and gradual increase of quality, considering the level of inventory, and considering the human resources methods and policies (Kaplan and Cooper, 1998).

Information technology affects the production environment at all levels including management, design, planning, manufacturing and customer relationship. Therefore, new concepts have been raised such as "Internet-based production", "virtual engineering" and "virtual factory" (Fathian, 2006).

Cost Management in projects is based on this approach that costs are not created automatically; but also, all costs is the result of right or wrong decisions of managers that mainly focused on how to use limited resources. Hence, cost management, has an important role in directing decision making process of managers to create value to all stakeholders and it attempts to create appropriate and innovative reconciliation between the interests of various stakeholders.

Philosophy and approach of cost management is a set of tools and techniques that can analyze management decisions and in any case support management decisions.

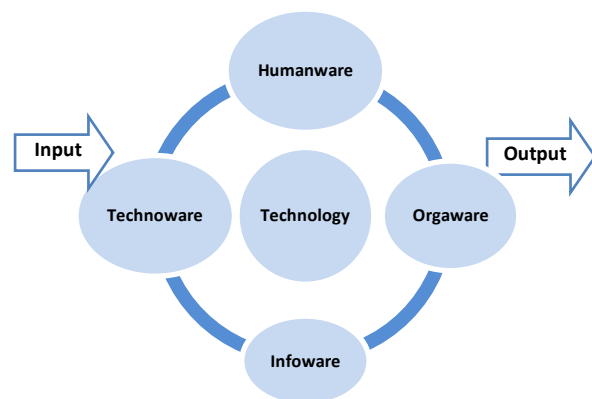
Project Cost Management includes the processes of cost estimates, budgeting and cost control and if we could create a clear connection between the process of estimating and cost control by using the correct information, it will lead to a rational and deliberate decisions and the budget will not go to waste (Zokayi Ashtiani, 2010).

Detailed information about costs is essential for all aspects of business from the product design politics through pricing policies. However, most companies still use the traditional cost accounting systems that have been created in the past decades (Gupta and Gallway, 2003). On the other hand, cost management is a solution to identifying changes in production and sales methods and its effects on the cost structure and it is also providing relevant information on project costs (Pakmaram and et al., 2010). Accordingly, evaluation of project cost management and information technology relationship that they are both keys elements in decision making would be useful.

## Describing Information Technology

Information technology is composed of two parts: information and technology. According to the definition of A.L.A dictionary, "Information" mean side as, facts and creative works of minds that recorded, published or distributed formal or informal in any shape and it may be documented or not (Young, 1983).

Technology is the factor converting natural resources, capital and human resources to the goods or services. Its constituent elements include hardware, software or specialist human resources, technology appeared in documents, evidences or information and organization or orga ware (Ala-addini and Daqayeqi, 2008).



**Fig1. Model of scope technology atlas and theory of professor Nawazsharif (Michiels and Van Crowder, 2001)**

The technology has four main components which are as follows:

- A) Techno ware: the technology that exists in objects used for providing jobs or services such as tools and equipment, etc.
- B) Human ware: the emergence of technology in mankind, such as engineers, managers and scientists.
- C) Info ware: the technology that exists in various information, texts and documents are used to produce goods or services.
- D) Orgaware: It is including managerial methods and organizational systems, leadership power and decision making improvement motivation and providing organizational goals, such as workshops, laboratories, etc. (Egmond, 2002).

The concept of information technology:

**Comprehensive Definition:** Information Technology is a branch of technology that allows for study, application and processing of data in the field of storage, manipulation, transmission, management, control and automated data preparation by using hardware, software and net ware (Fathian, 2006).

A combination of Scope Atlas Technology Model and ICDL certificate is used for the operational model of current study which is as follows:

The guide to project management Body of Knowledge is a standard guide for project management profession. The increasing adoption of project management implies application of appropriate knowledge, processes, skills, tools and techniques that can affect the success of projects. PMBOK Guide would recognize subset of project management body of knowledge as a generally known good solution (ZokayiAshtiani, 2010).

Cost management is a process through which the project costs or expenses recognized, endorsed, and paid officially. The purpose of the cost management process is that real costs are occurred during the project life cycle accurately recorded (Westland, 2010).

Definition of Project Cost Management base on PMBOK standard:

Project Cost Management includes the processes associated with estimating, budgeting and cost control which a project can be completed with the approved budget (ZokayiAshtiani, 2010).

Under this standard, Project Cost Management includes the following three steps:

- 1) Cost estimation, budgeting and cost control:
- 2) Cost estimation: according to the standard definition of project management, cost estimation of development process is an approximation of required financial sources for completion of project operations. Cost estimation is a prediction based on known information in a point of time that encompass identifying and considering cost options from start to completion of the project (ZokayiAshtiani, 2010).

Hilton, et al (2008) generally divided cost estimation methods into two categories:

- 1) Estimation by using previous information.
- 2) The Unit estimation

Estimation using previous information means to predict the likely costs of a new project using actual costs of previous similar projects. In this method, the calculation is performed for each operating unit or for each unit of surface. This technique is quick and easy and its only weakness is low accuracy. This method is applicable typically in the early stages of the project when there is limited information (Ming Sun, et al., 2008).

Estimation of unit cost is one of analytic methods of estimation that predicts the costs by calculating all project resource requirements (labor, materials and tools). This estimation method is more accurate and is used in the final stages of design for participating in the tendering process. This assessment involves collecting and analyzing large volumes of data. The computers are ideal tools to support these activities Budgeting.

Budgeting is the process of aggregating the estimated costs of individual activities or work packages to establish an approved cost baseline. This baseline includes all of the approved budgets, but precautionary or administrative reserves are exemption.

- 1) Cost control

Cost control is the process of monitoring project status in order to update the project budget and managing changes to the cost baseline. Control of project costs includes:

- 2) Influence on factors that create change in the approved cost baseline,
- 3) Ensure that cost consuming does not exceed the approved capital, either periodical or in the entire project,
- 4) Monitor cost performance to isolate and understand the deviations from the approved cost baseline,
- 5) Monitoring on job performance compared with capital consumption,
- 6) Attempt to control expected overflows of cost within acceptable limits (ZokayiAshtiani, 2010).

Francis Hartman states these reasons for the failure of the project:

- Poor estimates (which increases the cost);
- Uncertain limits of project;
- Poor and inappropriate communication in project (most important reason) (Hartman, 2000).

By examining and comparing the reasons, it is obvious that most of reasons for project failure have common sources such as poor management of the project (unknown amplitude and timing errors) and failure in communication between project stakeholders including project manager with team members, customers, and senior managers. Information technology can fill the gap of access to accurate information and to ensure project success. Hence It should there is exchange of information in a project from start to finish to enable administrators to make rational decisions.

## 2. Literature Review

Prdakhtchy (2003) examines the impact of information and communication technology on organizational structure of organization of "Tamin-e Ejtemaei" (Social Security Fund). The aim of the study was to investigate the effects of information and communication technologies to improve employees' work, independence and freedom, responsibility and decision making of staff. The results showed that the application of information and communication technologies in social security organization causes improvement in the responsibility of staff.

Seifi (2005) has conducted another study "Create linkage between the processes of estimating and cost

control in the project management in NARGAN Company." The purpose of this study is to develop a system that can integrate the Processes of cost estimating (before and during project implementation) and cost control and to fill the gap between these two processes. In this regard, he concludes that the integration process is necessary to estimate the costs at various levels and therefore suggested to create a database. This database is a convenient tool for estimate the cost of the project during the project.

Another study has been conducted by Pakmaram, and et al (2010), "The factors affecting the application of cost management systems for the petrochemical industry." The purpose of the research is to evaluation of factors affecting the implementation of cost management in the petrochemical industry form analytical view point. Finally, it is found that the variety and complexity of the production process in the petrochemical industry creates limiting factors in the application of cost management and concluded that, due to the complexity of the industry and its related factories, there is no way to provide a uniform model for cost management system in this industry.

Bacos and Treacy (1986) have discussed the role of information technology to gain a competitive advantage. Under this model, information technology increases the unique characteristics of product. This is done through the customize products according to customer's interest. IT reduces search costs, so that customer can access the detailed information about the products they need within a few seconds on the internet and choose the best option.

Porter (1980) and Shank (1992) based on the concept of competitive advantage presented a model of strategic cost management. The model consists of a set of analytical methods that will shape the strategic management insight. Analytical methods are: Analysis of Strategic value chain, Analysis of strategic positioning, Stimulus analysis, and Strategic cost. Accordingly, a company should first analyze the source of the cost and to determine finished cost of product. Second, the company analyzes their situation based on its product and selects an appropriate strategy and finally, after determining the proper strategy, the company determines the factors that led to the change cost by analysis of cost stimulus and ultimately follows a strategic approach to reduce.

### 3. Methodology

The present research is type of applied research and the research method, given the nature, Subject and research objectives, was descriptive and correlation-based survey.

#### Population and Sampling

The population studied in this research is all managers of Soufian Cement Co (n =35) and the sampling method was census. The data collection tool in this research was questionnaire and to measure the variables, the five-choice Likert scale (very low, low, medium, high and very high) was used. The results were used for statistical measures.

In this study, validity of the questionnaire is defined as the inner content and by using comments of experienced teachers of university. This questionnaire first has shown to the professionals and they have comment on the content and general involvement of

designed questions. The questionnaire was conducted after approval of professors and experts. The reliability of the questionnaire was calculated using Cronbach's alpha coefficient technique. IT Questionnaire reliability was calculated 0.88 and this value for project cost management questionnaire was 0.81. We can conclude that the questions have the required reliability.

In this study, after selecting the sample, the information technology and project cost management questionnaires provided to them simultaneously.

### 4. Results

Before testing the hypotheses, the Condition of parametric tests such as Pearson correlation coefficient is the normality of original data. Since the significance level of research variables in the Kolmogorov-Smirnov Test is greater than 0.05, it shows normality of data.

**Table1. Kolmogorov-Smirnov test to determine the normality of the data**

| Variables                            | Average | Standard deviation | Kolmogorov-Smirnov z | significance level sig |
|--------------------------------------|---------|--------------------|----------------------|------------------------|
| Level of Introduction to IT          | 10.8    | 1.2                | 0.93                 | normal =0.34           |
| Level of IT Utilization              | 10.85   | 1.2                | 0.97                 | normal = 0.35          |
| Level of ability to use IT           | 14.25   | 3.3                | 0.91                 | normal = 0.37          |
| level of IT hardware                 | 6.45    | 1.5                | 1.24                 | normal = 0.09          |
| Level of IT software                 | 6.8     | 2                  | 1.04                 | normal = 0.22          |
| Status of IT facilities              | 13.57   | 2.5                | 0.76                 | normal = 0.6           |
| It level                             | 62.77   | 7.8                | 0.67                 | normal = 0.92          |
| Level of The estimated cost          | 22.5    | 2.8                | 0.88                 | normal = 0.41          |
| Level of The budgeting               | 26.6    | 3.6                | 0.83                 | normal = 0.49          |
| Level of Control of cost             | 21.6    | 3.2                | 0.81                 | normal = 0.51          |
| Level of The project cost management | 70.88   | 9.2                | 0.54                 | normal = 0.75          |

Since the Table1 shows that all the variables are normalized, Pearson correlation test was used to test the hypotheses.

**Hypothesis1:** There is relationship between the status of information technology facilities and project cost management.

In this hypothesis, the status of IT facilities variable with 4 questions and project cost management with 19 questions and three dimensions: the estimated cost with six questions, budgeting with 7 questions and cost control with 6 questions were measured and evaluated. To test significance of relationship, because

of the variable is interval and normal, we have used the Pearson correlation coefficient test and the results shown in Table 2.

It is necessary to explain that since all data are normal, all hypotheses are examined with the Pearson correlation test and the dependent variable of research (Project Cost Management) will be analyzed according to this hypothesis.

**Table2. Pearson correlation coefficient test between the variables of status of IT facilities and project cost management and its dimensions.**

| Variable                         | Level of status of IT facilities |                                |                                      |                 |
|----------------------------------|----------------------------------|--------------------------------|--------------------------------------|-----------------|
|                                  | correlation coefficient          | Significance level (2 domains) | correlation magnitude r <sup>2</sup> | considerations  |
| Level of cost estimation         | 0.36**                           | 0.03                           | 12%                                  | Significant     |
| Level of Budgeting               | 0.21                             | 0.2                            | ---                                  | Not significant |
| Level of Cost control            | 0.07                             | 0.62                           | ---                                  | Not significant |
| Level of project cost management | 0.24                             | 0.15                           | ---                                  | Not significant |

As shown in Table 2, the relationship between the level of status of IT facilities and Level of cost estimation is significant. Because significance level of this test ( $\alpha = 0.3$ ) is smaller than 0.05 and correlation magnitude is  $r^2 = 12\%$ .

Because of a positive correlation coefficient, there is a direct relationship. However, this hypothesis is not confirmed.

**Hypothesis 2:** There is a relationship between the level of introduction to information technology and project cost management.

In this hypothesis, the variable level of introduction to information technology with 3 questions and variable of project cost management were measured and analyzed. The results based on the Pearson correlation coefficient test are shown in Table 3.

**Table3. Pearson correlation coefficient test between the variables of level of introduction to IT and project cost management and its dimensions**

| Variable                         | Level of introduction to IT |                                |                                      |                 |
|----------------------------------|-----------------------------|--------------------------------|--------------------------------------|-----------------|
|                                  | correlation coefficient     | Significance level (2 domains) | correlation magnitude r <sup>2</sup> | considerations  |
| Level of cost estimation         | 0.21                        | 0.22                           | ---                                  | Not significant |
| Level of Budgeting               | -0.02                       | 0.88                           | ---                                  | Not significant |
| Level of Cost control            | 0.15                        | 0.36                           | ---                                  | Not significant |
| Level of project cost management | 0.13                        | 0.45                           | ---                                  | Not significant |

As shown in Table 3, there is no significant relationship between level of introduction to information technology and level of project cost management, level of budgeting and level of cost control. Since significance level of Pearson correlation coefficient test is greater than 0.05, the hypothesis is rejected.

**Hypothesis 3:** There is a relationship between the Level of IT Utilization and project cost management.

In this hypothesis, the variable Level of IT Utilization with 3 questions and variable of project cost management were analyzed. The results based on the Pearson correlation coefficient test are shown in Table 4.

**Table4. Pearson correlation coefficient test between the variables of level of IT Utilization and project cost management**

| Variable                         | Level of IT Utilization |                                |                                      |                 |
|----------------------------------|-------------------------|--------------------------------|--------------------------------------|-----------------|
|                                  | correlation coefficient | Significance level (2 domains) | correlation magnitude r <sup>2</sup> | considerations  |
| Level of cost estimation         | 0.25                    | 0.13                           | ---                                  | Not significant |
| Level of Budgeting               | 0.34*                   | 0.04                           | 11%                                  | significant     |
| Level of Cost control            | 0.13                    | 0.44                           | ---                                  | Not significant |
| Level of project cost management | 0.32*                   | 0.04                           | 10%                                  | significant     |

As shown in Table 4, there is significant relationship between level of IT Utilization and level of budgeting, because significance level of this test ( $\alpha = 0.04$ ) is less than 0.05. Correlation magnitude is  $r^2 = 11\%$ , thus this hypothesis is confirmed with 95% confidence.

**Hypothesis 4:** There is a relationship between the Level of ability to use IT and project cost management.

In this hypothesis, the variable Level of ability to use IT with 4 questions and variable of project cost management were analyzed. The results are shown in Table 5.

As shown in Table 5, there is significant relationship between level of IT Utilization and level of budgeting and the level of project cost management, because significance level of this test ( $\alpha = 0.03$ ) is less than 0.05. Correlation magnitude is  $r^2 = 11\%$ , thus this hypothesis is confirmed with 95% confidence.

**Hypothesis 5:** There is a relationship between the Level of It hardware and project cost management.

In this hypothesis, the variable Level of It hardware with 2 questions and variable of project cost management were analyzed. The results are shown in Table 6.

**Table5. Pearson correlation coefficient test between the variables of Level of ability to use IT and project cost management and its dimensions**

| Variable                         | Level of ability to use IT |                                |                             |                 |
|----------------------------------|----------------------------|--------------------------------|-----------------------------|-----------------|
|                                  | correlation coefficient    | Significance level (2 domains) | correlation magnitude $r^2$ | considerations  |
| Level of cost estimation         | 0.25                       | 0.13                           | ---                         | Not significant |
| Level of Budgeting               | 0.31*                      | 0.03                           | 11%                         | significant     |
| Level of Cost control            | 0.13                       | 0.44                           | ---                         | Not significant |
| Level of project cost management | 0.33*                      | 0.03                           | 11%                         | significant     |

**Table6. Pearson correlation coefficient test between the variables of Level of IT hardware and project cost management and its dimensions**

| Variable                         | Level of IT hardware    |                                |                             |                |
|----------------------------------|-------------------------|--------------------------------|-----------------------------|----------------|
|                                  | correlation coefficient | Significance level (2 domains) | correlation magnitude $r^2$ | considerations |
| Level of cost estimation         | 0.515**                 | 0.002                          | 26%                         | significant    |
| Level of Budgeting               | 0.68**                  | 0.00                           | 46%                         | significant    |
| Level of cost control            | 0.502**                 | 0.002                          | 25%                         | significant    |
| Level of project cost management | 0.72**                  | 0.00                           | 51%                         | significant    |

As shown in Table 6, there is significant relationship between level of IT hardware and Level of cost estimation, level of budgeting, Level of cost control, and level of project cost management, because significance level is less than 0.05. In regard to results, this hypothesis is confirmed.

**Hypothesis 6:** There is a relationship between the Level of IT software and project cost management.

In this hypothesis, the variable Level of IT software with 2 questions and variable of project cost management were analyzed. The results of Pearson correlation coefficient are shown in Table 7.

As shown in Table 7, there is significant relationship between level of IT software and level of project cost

management and its related dimensions. Therefore, this hypothesis is confirmed.

**Hypothesis 7 (main):** There is a relationship between the IT Level and project cost management. In this hypothesis, the variable IT Level with 18 questions and variable of project cost management with 19 questions and 3 dimensions (Cost estimation with 6 questions, Budgeting with 7 questions and cost control with 6 questions) were measured and analyzed. The results of Pearson correlation coefficient are shown in Table 8.

Table7. Pearson correlation coefficient test between the variables of Level of It software and project cost management and its dimensions

| Variable                         | Level of IT software    |                                |                                      |                |
|----------------------------------|-------------------------|--------------------------------|--------------------------------------|----------------|
|                                  | correlation coefficient | Significance level (2 domains) | correlation magnitude r <sup>2</sup> | considerations |
| Level of cost estimation         | 0.33*                   | 0.04                           | 11%                                  | significant    |
| Level of Budgeting               | 0.32*                   | 0.04                           | 10%                                  | significant    |
| Level of cost control            | 0.32*                   | 0.04                           | 10%                                  | significant    |
| Level of project cost management | 0.407*                  | 0.01                           | 16%                                  | significant    |

Table8. Pearson correlation coefficient test between the variables of IT Level and project cost management and its dimensions

| Variable                         | IT Level                |                                |                                      |                 |
|----------------------------------|-------------------------|--------------------------------|--------------------------------------|-----------------|
|                                  | correlation coefficient | Significance level (2 domains) | correlation magnitude r <sup>2</sup> | considerations  |
| Level of cost estimation         | 0.454*                  | 0.003                          | 20%                                  | significant     |
| Level of Budgeting               | 0.419*                  | 0.003                          | 17%                                  | significant     |
| Level of cost control            | 0.29                    | 0.08                           | ---                                  | Not significant |
| Level of project cost management | 0.485**                 | 0.003                          | 23%                                  | significant     |

As shown in Table 8, there is significant relationship between IT level and level of project cost management, Level of cost estimation, and Level of budgeting. Because significance level of this test is less than 0.05 and positivity of correlation coefficient, the relationship is direct. By increasing IT application level, project cost management in the aspects of cost estimation and budgeting acts more accurate and efficient. But the relationship between It level and cost control is not significant because significance level of test is greater than 0.05

### 5. Discussion and Conclusions

The results of research hypotheses showed that:

- 1) There is a relationship between information technology and project cost management.

This is the main research hypothesis that confirmed with 99% confidence. In relation to the main research hypothesis, a scientific- propagation paper by title of "create linkage between estimation and control processes in project" was published. The results show that if there is proper communication between estimating and cost control processes, it causes all information about unit prices of cost factors are updated and improves accuracy in estimating the costs of materials and equipment, and estimation of finished cost of future projects (Saifi, 2005).

According to the scientific-propagation paper, and the result of this hypothesis, we can conclude that one of the effective tools to bring connections and make correlations between the estimation and cost control process in the project cost management is information technology. But research sub-hypotheses shows that cost control by using information technology is not possible.

- 2) There is no relationship between the status of information technology facilities and project cost management.

This hypothesis is consistent with the results of the Sarafizadeh and others on the title the evaluation of Effects of information technology applications on efficiency of cooperatives, and shows that by considering the slow growth in the use of new technologies in the production of goods and services in Iran, there are always some arrears in the use of these facilities (Sarafizadeh, and et al., 2010).According to in the research results, level of IT facilities at the company is moderate to low; it shows that a lack of potential IT facilities is faced management with many problems. One of the main reasons that create this situation is the low speed of introduce and product of this technologies in Iran.

- 3) There is no relationship between introduction to information technology and project cost management.



A study under title of the evaluation of using information technology in the storage and retrieval of the manuscript showed that due to lack of familiarity of librarians with information technology, this equipment is less used. According to the research results that the level of introduction of managers with IT is average, it follows that due to lack of full knowledge of managers with IT, there is no relationship between these variables. The results of the study are consistent with this assumption.

- 4) There is no relationship between Level of IT Utilization and project cost management

About Level of IT Utilization for management, a study under title of the role of ICT in improving cultural management showed that using ICT is effective in reducing the costs of providing services for Cultural and Artistic Organization of Tehran Municipality and cultural managers can for optimization of the use of existing spaces, replacement of new efficient tools and methods than traditional methods and tools, increase of efficiency and satiety to a massive archive, provide fields forever increasing use of information and communication technology. Results of similar studies also emphasized that the use of information technology causes an improvement in Management in all areas. The financial managers due to deal with massive amounts of critical data, by using information technology will enable to improve their performance.

This is consistent with the above hypothesis.

- 5) There is relationship between Level of ability to use IT and project cost management.

The concept of information literacy means the ability to recognize when information is used, Locating, Evaluation, Effective use of information, and different modes of Data transfer. The concept of information literacy means that an individual for using information technology should have special skills and abilities. ICDL training courses is one of good strategies for this purpose. This hypothesis states that to use computers in the workplace, managers should be taken seriously training for the ICDL. In simple terms, for using of information technology we should have computer literate.

- 6) There is relationship between Level of IT hardware and project cost management.

- 7) There is relationship between Level of IT software and project cost management.

The results of the last two hypotheses 6 and 7 are almost the same results of Anderson. Managers should manage new changes through effective support, application of other human resources and development of Application of ICT (Salehi and et al., 2012). The result showed that the two hypotheses are confirmed. For using of information technology in enterprise, must exist some context for it using. Organizational processes and supports of Organizations executives have a significant role in using of IT and the use of this technology should be integrated into the strategy of company. The reason of this emphasis is due to the fact that in many cases, various organizations with no previous study make large investments in information technology and finally, great losses occurred because the technology is not consistent with the organization's strategy.

**Table 9. Summarization of the hypotheses results**

| hypotheses   | Result    |
|--|-----------|
| There is relationship between IT and project cost management                           | Confirmed |
| There is relationship between Level of IT facilities and project cost management       | Rejected  |
| There is relationship between Level of introductions to IT and project cost management | Rejected  |
| There is relationship between Level of IT utilization and project cost management      | Confirmed |
| There is relationship between Level of ability to use IT and project cost management   | Confirmed |
| There is relationship between Level of IT hardware and project cost management         | Confirmed |
| There is relationship between Level of IT software and project cost management         | Confirmed |

The Secondary results obtained from this study are:

- 1) There is direct relation between Level of IT facilities and level of cost estimation.
- 2) There is no significant relation between level of introduction to IT and project cost management, level of budgeting, and level of cost control.
- 3) There is significant relation between level of ability to use IT and project cost management, level of budgeting.
- 4) There is no significant relation between level of ability to use IT and cost estimation, and level of cost control.

- 5) There is direct relation between level of IT hardware and project cost management, level of budgeting, level of cost estimation, and level of cost control.
- 6) There is direct relation between level of IT software and project cost management, level of budgeting, level of cost estimation, and level of cost control.
- 7) There is direct relation between f IT and project cost management, level of budgeting, and level of cost estimation.
- 8) There is no significant relation between IT and level of cost control.

The result of present study showed that parametric and accurate estimate of cost is not so important in Iran and while projects should be defined annually according to the survival triangular theory "fast, cheap and good", but we see in practice that projects are not completed in due course, and this causes to spend more funds and the work is not completed with good quality; And may provide grounds for abuse of resources. Evidences show that accurate estimation of costs also is not so important in the Soufian Cement Company. For example, to raise the multiplier funding of projects in 2009 with respect to the financial statements for that year is evidence.

Another important result of this study is that organizational processes and support of executives in using of information technology for cost management can help to proper managing of projects and provide areas for accurate and true estimation of cost, Proper budgetary and finally, precise control of costs.

In this regard, the software factors of this technology are should also consistent with the hardware applications and relation and integration of these two factors will assist the project manager in carrying out their responsibilities.

#### **Proposals in line with the research results**

- 1) The preliminary results showed that status of information technology in company is not in acceptable level and facilities and modern technology is not up to date. So necessity of employing new management and engineering technologies must become a management priority. According to the obtained results, the higher the status of information technology, cost estimate and the budget more carefully done. Therefore, it is

- suggested that information technology about project cost management are taken seriously.
- 2) According to the preliminary results that show that introduction to information technology in managers is at a medium level. So it is suggested to training managers of Soufian Cement Co and other companies to held ICDL training for all employees and managers to increase computer literate.
  - 3) It is suggested to the Soufian Cement Co and similar companies' executives to examine old and new methods of allocation and use of funds of the Corporation and according to modern methods of budgeting for projects examine presence or absence of substrate needed to deploy the project budgetary system using modern methods.
  - 4) According to the obtained results, cost control is not possible with the use of information technology. This is due to Managers' knowledge of IT and use of these technologies is not at an acceptable level. Thus, failure to control costs by using information technology is due to poor Information literacy of managers. Considering the fact that some projects are done on a large scale and controlling all project activities using the traditional system is not possible and the manager deals with massive amounts of data, it is suggested to the Soufian Cement Company and similar companies' executives to investigate control of costs by using ICT as a new technology.
  - 5) According to Anderson's research results and the results obtained in the last two hypotheses, managers are the main key of change in the organization. So, they are the managers that with use or non-use of information technology provide change or no change in organization. However, the opinions and judgments of experienced professionals can help this process. This role is supported by the results of the initial results of the research. Therefore, it is suggested to the Soufian Cement Co and other similar Companies that will provide the context for change in the company with experienced experts.

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