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Development of Relationship Management in Employer Level (Case Study: Squares Organization of Tehran)

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Abstract: The present study aims at collecting data though a survey for picking a management method in employer level. The Kolmogorov-Smirnov test was adapted in order to examine the data normality. Then, to determine and rate an appropriate management style in employer level, the weight of each criterion per each style was computed. Here, first the de-scaled matrix was calculated, then the Shannon entropy was used to compute coefficient of each criterion and finally, the degree of uncertainty and level of significance for each criterion were computed. Thanks to commonality of criteria for all methods, the coefficient of significance per criterion was multiplied by all styles. The obtained results of sum of the criteria scores were applied for rating and choosing the apt relationship management style in employer level. The main achieved result of the current research is to determine two in-house and design, build, finance and operate for the Squares organization of Tehran based on first and second rank. At the end, some recommendations are provided for establishment of relationship management in employer level according to two relationship management methods for the desired organization.

Keywords: Multi criteria decision makings, project management, relationship management

INTRODUCTION

Human communications with formal and informal groups as well as methods for improvement of these communications seems inevitable in management for removing human relations obstacles within the organization (Laket, 1994). Lots of investigators believe that most of managements' time is spent on face-to face, or telephone communications with their employees, colleagues and customers (Moein, 1994). This, therefore, signifies the importance of relationship management. In the traditional methods, was considered as the agent for investment, designing, supplies, execution and eventually owner of plans (Moughli and Bavandpour, 2010). By expansion and complexity of plans, today, the three factor method including employer, consultant and contractor is replaced with the traditional methods in which each sector is in charge of a specific task in the project (Trumen and Hartly, 1996).

Accordingly, an employer sounds to be successful that can juxtapose the required elements for successful execution of a plan correctly and benefits from consultants and experts' ideas as much as possible (Rezaie, 1997). Though, for proper arrangement of these elements, all of those involved in the project such as executive management, employer, employees and contractors must communicate with each other. In fact, interaction is a process through which such task as planning, organizing, directing, leadership and surveillance take place. Thus, making an effective and good communication can remove all tensions on the way of doing tasks or it may decrease them and managers would be able to enjoy it for set their time. In spite of this benefit, there are some limitations then way of having effective interactions that by understanding and knowing them in the real world, the manager by following a proper strategy, would be able to make dynamic interactions and reduce tensions. Consequently, the current research purpose is to develop a new and conceptual method for relationship management between the employer and employees.

REVIEW OF THE LITERATURE

One of big problems managers are engaged in during large projects is failure of relationship management. As a matter of fact, in most of large projects based on the employer's demands, administers need to prepare a well-matched and communicative executive method, but the main problem (often apart from issuing the technical documents) is in updating procedures in employer's communication plans. Due to weakness in communication plans among different sections and with project management and contractors, lots of unnecessary correspondences are exchanged that

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most of the times they are only for informing. The present research tries to develop indexes for the communication model in the employer level as follows:

Delegation: In large projects presence of numerous of meetings and committees prove that tasks are not appropriately specified and not delegated to professional employees. This represents inapt delegation.

Approvals follow-up: One of weak points in holding the employer meetings is following-up the approvals. Due to inappropriate explication of the problem, subjects become repetitions and the executive display no proper commitment and accountability to the employer.

Maintaining the records, classification of data and definition of accessible levels: Thanks to nature, complexity and size of the assigned projects, there some failures in maintenance records, data classification and definition of accessible levels in field of the employer's archive. This problem causes difficulty in access to the data in time of emergency.

Experimental reserves: In each project when is running because of unpredictable accidents and augmentation of the project in employer level, a number of technical, managerial and information experiences are created for administers recognized as a especial knowledge for that subject. However, after the specialists left the project while did not register and document these experiences to be distributed in the employer management level, huge costs are imposed in the employer level as cause of duplication. Considering the broadness of executive projects in Iran as well as diverse nature of projects and conditions and special place of the executive organs of projects besides the stockholders, five general administration methods could be counted for projects administrations as follows:

- **In-house method:** In-house method the employer is directly in charge of project execution. Indeed, through hiring labor forces and providing materials, he administers the project and in few cases invites the consultant organization as designer. The chief element in this method is presence of a technical team and specialized administrative forces in body of the employer. In in-house method, the employer is required to manage the project either in macro or micro level. Also, all of administrative processes, providing goods and supplies take place parallel to the designing process onside the employer organization.
- **Traditional method:** In traditional method, the employer with a separate contract chooses the project designer and contractor. Here, by specifying the needs and objectives of the project benefits from engineering services of the consultant as the designer. In traditional method, the consultant engineer is responsible for designing and preparation of needed documents for the project administration fully. In the traditional method, during the process of creation of plans and projects, the employer takes the responsibility of determination of the development stage requirements in a complete form and notifying them as description of services. In some occasions, in independent stage of feasibility studies by the consultant engineer must be hold during or before the development stage as a request of the employer.
- **Construction management method:** The construction management method is, indeed the modified version of the traditional method. In other words, in this method, the employer calls other foreign organization for coordination between the designing consultant and the contractor. However, today's, management and control project services in some conditions are entrusted other consultant and the construction management organization responsibility is to coordinates these three parts of the projects in contact with the employer's demand. Principally, the construction management contracts are categorized into two main types:
  - Construction management based on payment
  - Construction management based on participation in risk
- **Design-build method:** In design-build method, the contractor of design and build is an organization that undertakes detailed design and engineering services and construction, procurement and supply of goods and equipments, performing operations, manufacturing, installation and project management of these activities. The contractors of design- build in some cases work as a consortia and collaboration between a number of companies which act under surveillance of one of collaboration organs as general contractor of design and build (Gibbs, 2008). Considering the special conditions of each project and the employer's expectations, apart from strategies of the project funding, this method was introduced in two approaches as (Sahbiye and Ghemi, 2008):
  - Turnkey
  - Combined design and build
- **Design, build, finance, operate:** With regard to diversity and expansion of projects, the employer is obliged to in different ways guarantee the conditions of capital return. This, occasionally, may vary from guarantee purchasing of the product to buying project services ().

In this method, by transferring a considerable part of the project expenses to the participatory

organization, higher portion of the project risk will be delivered to the factors involved. According to the nature of investment affairs in the project, as well as diversity of large executive projects, this method is classified into different approaches as below:

- Build, Operate and Transfer (BOT)
- Build, Ownership, Operate, Transfer (BOOT)
  Build, Lease, Transfer (BLT)
- Build, Transfer, Operate (BTO)
- Design, Build, Finance, Operate (DBFO)
  Modernize, Operate, Ownership, Transfer (MOOT)
  Rehabilitate, Operate, Ownership (ROO)

METHODOLOGY

The present research is a type of descriptive-survey study. It is descriptive because it describes in details a situation or condition, here, description of the relationship management in employer level. Also, it is an applied one since using its obtained results can assist managers and employees of the present study and even other public organizations to identify the relationship management in the employer level and get acquainted with final prioritizing of options in the future planning. Finally, for collecting the data a questionnaire was adapted. The population consists of all managers and employees of the Squares organization during years 2012 to 2013.

The data collection and sampling method: Related books, articles, the inherent, library sources, observation, interview and questionnaire and the organization archive were methods of collecting information. Then, a survey was used in order together the required data. Through the Cochran's formula 92 subjects were selected:

$$n = \frac{N.Z_{\alpha/2}.\delta^2}{\varepsilon^2(N-1) + Z_{\alpha/2}.\delta^2}$$

where,

$Z^2_{\alpha/2}$ = Amount of normal change I accordance with level of confidence (1-α) that in the present research in 95% level of confidence it is equal to 1.96.

σ^2 = The population variance

ε^2 = Allowed amount of error

$$n_{cochran} = \frac{\frac{P(1-p)z^2_{1-\alpha/2}}{d^2}}{1+1/N\left(\frac{P(1-p)z^2_{1-\alpha/2}}{d^2}-1\right)} = \frac{\frac{0.5^*0.5^*(1.96)^2}{(0.05)^2}}{1+1/121\left(\frac{0.5^*0.5^*(1.96)^2}{(0.05)^2}-1\right)} = \frac{384}{4.1666} \cong 92.2$$

Validity and reliability: By validity, it means preciseness of indexes and criteria for measurement of the phenomenon. Since, the research instruments in the current research include hardware (book, articles, internet, library resources and questionnaire) and knowledge ware (computer software, formulas and mathematical computations), there is no need to do validity test calculations. In field studies a survey is used. In the present study, therefore, by use of closed questions (five options), the data were gathered. A pilot study with 30 subjects was performed in order to test the questionnaire validity and after knowing about the experts' remarks on the questionnaires, some modifications were used. Next, the final standardized questionnaire after validity assessment was distributed and collected. The Chronbach's alpha tested the questionnaire reliability. It was achieved 0.83 which proved high rate of the questionnaire reliability.

The conceptual model: For development of relationship management in the employer level and choosing a proper model, first, criteria of relationship management and its possible management options in the employer level should be determined. Four selected criteria of the relationship management in the employer

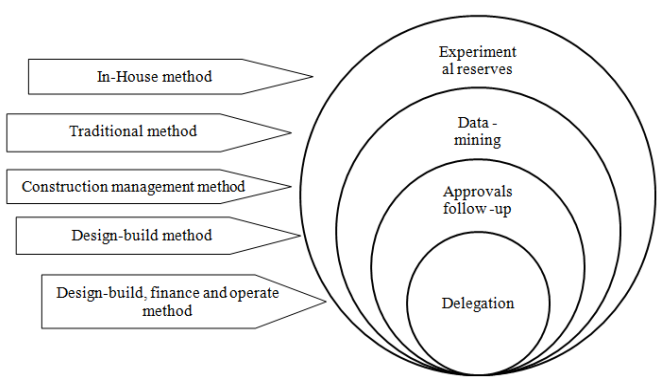

Fig. 1: The conceptual model

Table 1: Kolmogorov-Smirnov test

	Delegation	Approvals follow-up	Data-mining	Experimental reserves	
Kolmogorov-Smirnov Z	0.553	0.601	0.678	0.597	
Asymp. Sig. (2-tailed)	0.831	0.796	0.902	0.846	
	In-house	Traditional	Construction management	Design and build	Design build, finance, operate
Kolmogorov-Smirnov Z	0.593	0.576	0.614	0.633	0.671
Asymp. Sig. (2-tailed)	0.712	0.841	0.916	0.739	0.770

level consist of delegation, approvals follow-up, maintenance records and classification of information besides specification of accessible levels and empirical reserves). In the present research, maintenance of records, classification of information and specification of the accessible levels criteria are named "data mining" (Mogibel, 1999). The principal options of the relationship management in the employer level in the current research are five methods, In-house (IH), Traditional (T), Construction Management (CM), Design and Build (DB) and Design, Build, Finance and Operate (DBFO). Thus, the research conceptual model will be as shown in Fig. 1.

THE RESEARCH IMPLEMENTATION

In the present research for understanding a meaningful relation between criteria of the relationship management and its possible options, the normalized tests were utilized in order to evaluate the sample distribution. Also, the Pearson's correlation test was adapted to determine whether or not a meaningful relationship exists between the selected criteria and possible options.

Test of normality (Kolmogorov-Smirnov): In onset, to test the normal distribution of the sample, Kolmogorov-Smirnov test was used. Table 1 shows the results.

Since the value of level of significant is larger than 5% for each of the relationship management criteria in the employer level, the normal distribution is confirmed.

Computing weight of criteria: To choose suitable option of the relationship management in the employer level, in spite of availability of the selected criteria, first the response matrix is drawn and then de-scales it through the soft method. De-scaling formula is equal to $n_{ij} = a_{ij} \div \sqrt{a^2_{ij}}$.

Where, (i = 1, ... m), the descaled matrix is used for evaluation of entropy method (Shannon). The entropy formula is as below:

$$E_i = -K \Sigma [p_{ij} * \ln p_{ij}], (i = 1, ... n)$$

In the next step, the value of uncertainty (d_j) is calculated as follows:

$$d_j = 1 - E_j, \forall j$$

Table 2: De-scaled results

Criteria options	Delegation	Approvals follow-up	Data mining	Experimental reserves
IH	0.195	0.156	0.260	0.389
T	0.292	0.208	0.375	0.125
CM	0.178	0.385	0.231	0.077
DB	0.201	0.068	0.682	0.023
DBFO	0.192	0.375	0.208	0.125

Table 3: Entropy calculation

E_1	E_2	E_3	E_4
0.9876	0.8906	0.9891	0.6649

Table 4: Calculation of degree of uncertainty

d_1	d_2	d_3	d_4	Σd_j
0.0123	0.1094	0.0109	0.3351	0.4676

Table 5: Computation of weight of indexes

W_1	W_2	W_3	W_4
0.0264	0.2339	0.0233	0.7165

Table 6: Applying coefficient of significance for each criterion

Criteria options	Delegation	Approvals follow-up	Data mining	Experimental reserves
IH	0.0051	0.0635	0.0061	0.2787
T	0.0077	0.0486	0.0087	0.0896
CM	0.0047	0.0900	0.0054	0.0552
DB	0.0053	0.0159	0.0159	0.0165
DBFO	0.0051	0.0877	0.0048	0.0896

Table 7: Rating of relationship management options in the employer level

Communication method	IH	T	CM	DB	DBFO
Score	0.3264	0.1546	0.1553	0.0536	0.1872
rank	1.0000	4.0000	3.0000	5.0000	2.0000

Finally, weight of each criterion should be computed by the following formula:

$$w_j = d_j \div \Sigma d_j, \forall j, (j = 1, ... n)$$

Considering the scattering of results, every criterion is computed for each option through balanced averaging. The created results show a 5*4 matrix that options are in rows and criteria are in columns. Finally, the matrix became descaled. Table 2 presents the results.

Next, the entropy value per each criterion was calculated based on the above formula. Table 3 shows the results. Here, the K value equals 0.721.

After, the value of uncertainty is achieved by the following method. The results are provided in Table 4.

Finally, the weight of indexes should be computed. Table 5 indicates the results.

Now, according to the obtained weights per each criterion, we apply coefficients in Table 2. This application result is given in Table 6.

At the end of computations, to select the correct method of relationship management in the employer level, sum of values for criteria in each option have to be obtained. Then, the biggest number will be equal to the best option for relationship management in the employer level. Table 7 represents this process:

IH > DBFO > CM > T > DB

The resulted calculations show that the options are prioritized as below:

IH > DBFO > CM > T > DB

As it can be seen, the best option for the Squares organization of Tehran in terms of relationship management in the employer level would be the In-House (IH) method.

CONCLUSION

In the current research, a questionnaire was used in order to collect the data for selection of the relationship management method in the employer level. The data normal distribution was measured via Kolmogorov-Smirnov test. Then, for rating and selection of appropriate relationship management in the employer level, the weight of each criterion for all methods was computed. In this calculation, first the decaled matrix was computed then by using entropy (Shannon) the coefficient per each criterion was measured. Finally, the uncertainty value was obtained and the coefficient of significance per every criterion was computed. Due to common criteria for all methods, the coefficient of significance of each criterion was multiplied in the related criterion for all methods. The sum of scores for every criterion was applied in rating and selection of proper option for relationship management in the employer level.

Taking all into consideration, two IH and DBFO are the first and second priority for the Squares organization of Tehran respectively. Therefore, some recommendations are provided for this organization.

RECOMMENDATIONS

The relationship management program should be prepared in relation to the below objectives:

- Preparation of a suitable and integrated structure of communication and management of physical and electronical information cycle
- Minimizing amount of incorrect and repetitious information and maximizing of common resources and information usage

The subjects below should be covered from different internal and external communications aspects:

- Organization of project relationship management
- Specification of stakeholders, introduction of chief stakeholders and their characteristics as well as providing information and communication needs of the stockholders
- Communication language, model and methods besides related channels in the project and determination of the allowed communications
- Statement of information characteristics of documents and relationship management policies
- Determination of systems relevant to information management and documents

Advices:

- In order to prevent from unpredicted delays and pauses, implementation of each project before approval, should present a detailed description, work studies, timing and project administration methods, communications, selecting authorities and description of responsibilities must be delivered either orally or written. In this developmental plan, criteria of delegation, approvals follow- up, data mining and experimental reserves should be considered.
- The employer needs to take the responsibility of project implantation directly by employment of professional labor as well as supplying the materials.
- The design and surveillance should be given to another organization acts a consultant.
- Temporary teams of project management inside the organization are responsible for direct supervision on consumptions and promised schedules of execution.
- Some financial strategies like bonds or future participation rates provided by ownership can be used.
- Hardware techniques and equipments appropriate for interaction among execution and surveillance trams should be adapted in order to provide on time information and the progress reports must be delivered to mangers on line.
- At the end of each project, the execution and surveillance teams should report the details and keep them in the organization's archive for experimental usages in field of prier reserve in order to prevent from losses of duplication in the future projects.

REFERENCES

Gibbs, T., 2008. An Assessment of Turn-key Contracts for the Realization of Capital Works Projects. The United States Agency for International Development.

Laket, F.J., 1994. Effective Management. Translated by Amin Alavi, Public Management Training Center Publication, Tehran.

Moein, A., 1994. Time magnet an effective step in increase of building productivity and installment. 33: 14.

Mogibel, H., 1999. Project delivery system of mining project. CEM 600 Master of Engineering Report. King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia.

Moughli, A. and M. Bavandpour, 2010. Identification of the effective factors on relationship management with customer and evaluation of share of each factor in effectiveness of relationship management with customer. Farda. Manage. J., 9(23): 63-76.

Rezaie, M., 1997. Management and its usage in education. Period 7, 125: 12.

Sahbiye, M. and H. Ghemi, 2008. Using key turn method in industrial projects.

Trumen, M. and J. Hartly, 1996. A comparison between the time management skills and academic performance of mature and traditional entry university students. Higher Educ., 32(2): 199-215.