

Individual Factors Influence on Client Involvement: the Case Construction Projects in Saudi Arabia

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Abstract: Lack of client involvement in construction of public projects has been identified as the main cause of many operational problems. Clients need to perform their roles and responsibilities effectively and efficiently at the right time and through the use of correct methods in order to have the optimum involvement required during all the construction project phases, namely, the planning, design, construction, handover, and operation and maintenance phase. This paper investigates the influence of clients' individual factors on their involvement in construction project delivery. A questionnaire survey was distributed to various government agencies of the Kingdom of Saudi Arabia (KSA). Explanatory Factor Analysis was performed to group nineteen individual factors. The factor analysis result suggests that the individual factors that can involve clients' involvement in construction projects can be grouped into five, which are: adequacy of knowledge and experience for decision making in the early stage of design; ability to communicate clearly; job satisfaction; personal skills; and expertise in design and construction.

Keywords: Client Involvement, Individual Factor, Saudi Arabia, Factor Analysis

I. INTRODUCTION

The construction sector in Saudi Arabia is the largest and fastest growing market in the Gulf region [1, 2]. A strong economic standing has encouraged the Saudi Government to take the opportunity to spend money on many projects. However, a United Nations Development Programme [3] indicated that Saudi Arabia was failing to make real progress in achieving good management and organizational performance. This was clearly demonstrated in the number of projects experiencing delay, which increased from 700 projects in 2009 [4] to 3000 projects in 2013 [5].

Since the 1970s, construction project management practices in Saudi Arabia have varied [6] due to the different nationalities of the construction industry professionals. Furthermore, the quality of public projects has varied among government agencies due to the different approaches used [4, 7]. Some examples of problems experienced in construction projects in Saudi Arabia include cost and time overruns, disputes, errors, uncertainties in plans and specifications, and increased maintenance costs. The lack of client involvement in public construction projects has been proposed as the main cause of myriad problems [4].

Very little investigation has been reported that focuses on effective client involvement in public construction projects. In the Saudi context, only one study was carried out by Bubshait and Al-Musaid [6], more twenty years ago. They emphasized the quality of owner involvement in three project phases (planning, design and construction), and focused on defining the important tasks during the construction project phases. This paper investigates the influence of clients' individual factors on their involvement in construction project delivery.

II. CONSTRUCTION SECTOR IN SAUDI ARABIA

In the relationship between the parties in Saudi construction projects, the consultant has traditionally been considered as the major player in the construction project and this approach has served to isolate the contractors from the client [8]. The isolation between the contractor and the client reduces the client's influence on the project and makes the client dependent on the consultant [9, 10]. Furthermore, there is a perception among the clients in government projects in Saudi Arabia that the consultants are correct even if the offered resolution is different from the client's preference [11].

The lack of real progress in achieving good management and organizational performance in Saudi Arabia has been cited [3, 12]. According to Althynian [4], the UN Development Programme Report revealed some of the difficulties and problems faced by 850 construction projects out of 1035 projects underway between 1992 and 2009. Among these projects, 41% of them were experiencing cost overruns and 82% (700 projects) had exceeded the scheduled delivery timeframe. The Anti-Corruption Commission [5] updated these figures and painted a worse picture: in 2013, over 3000 projects had not been completed on time. The chairman of the Committee of Contractors and board member of the Riyadh Chamber of Commerce, blamed the government agencies for the delays in the implementation of the projects and pointed out that the reasons for incomplete projects were the large number of projects being put forward, errors in the project design, and weak supervision of all the parties in the projects [13]. One main reason can be attributed to the lack of planning and design, and this lack of planning is caused by the weakness of the clients' involvement in the project processes [4].

Client involvement during the formative and early design stages of a project is a critical factor that must be taken into account if a project is to be delivered on time, to

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budget and to the desired quality [14]. The success of a project starts with correct planning and design involvement in the early stage of a project and the client plays a major role in this stage [15]. Al-Sedairy [9] investigated management conflict in public sector construction in Saudi Arabia and found that the conflict in public sector construction occurred most frequently in the key relationships between the contractor and the client, and the contractor and the consultant. The conflict was found to occur most strongly in the later stages of a project during construction. Moreover, low levels of experience and the high rapid economic and construction boom had provided little time for the client to establish its norms [10]. Therefore, problems arising from incomplete or inaccurate engineering details were frequently serious and costly, and were often not discovered until the project had been completed or was in use. Such problems include cost and time overruns, disputes between clients and other parties (especially contractors), omissions, errors, ambiguities in plans and specifications, reduced life span, and increased maintenance costs [16].

III. CLIENT INVOLVEMENT IN CONSTRUCTION PROJECTS

A successfully constructed project begins with the client [17, 18]. Clients are central to the construction process and are considered to be the driving force in the project. This part of the literature review focuses on the understanding of the client concept and their roles and responsibilities in construction project processes.

Clients who are closely involved in managing a project are usually the most satisfied with the project quality [6]. However, the client has duties and responsibilities when involved in the construction process. Clients should identify and adopt effective practices that contribute to high performance in their involvement in the construction process [4, 7, 16, 18-22]. Involvement is determined by the degree to which the project team fulfills its responsibilities to each phase of the total construction process [19, 22-26]. The total construction process, from the beginning of the project idea through its start-up, was illustrated in the Quality in the Constructed Project Manual published by [27].

The degree of client involvement is based on taking the right decision during the construction project processes. Involvement in a construction project is like having a "black box" that needs to be opened by the client. Then, the client divides the box (project) to phases (project phases) and the phases are broken down to items (tasks). With the procedure chosen, the client delivers the project according to what was expected. Therefore, good involvement produces good outcomes so the decisions are taken mainly based on adequate information, rich knowledge, and appropriate skills to use knowledge and information. In a complex environment, undetermined and insufficient external information as input during the project could trigger incomplete and poorly constructed results [28]. Generally, the entire client involvement procedure is based on the weight of the client's experience [29].

Therefore, for many construction projects, making good and timely decisions is not an easy task to accomplish. Making the right decision is typically not a simple matter, as most decision problems in construction projects are highly complex in nature. This complexity is due to a number of factors, either in the construction process or in management, that affect project success and cause project failure. Therefore, knowing these factors can be helpful for analyzing the potential reasons for project success or failure [21].

Individual Factors Influencing Client Involvement

Understanding clients' attitudes and actions is critically important for construction professionals in collectively taking the construction sector forward [30]. Out of 44 factors affecting the construction project, as identified by Chan, Scott [24], the attributes that are related to the client's individual factors include: the client's experience and ability; the nature of the client; the size of the client's organization; the client's emphasis on cost, time and quality; and the client's contribution to the project. The project-related factors include the complexity of the project, nature of the project, and size of the project. In projects which are complex and large in size and where there is congestion between project elements, coordination between the client and the project team is needed. The study by Chan et al. also focuses on the project team and how to improve the effectiveness of projects by identifying the project success and the critical success factors.

Some factors that can lead to a poor quality outcome in some highway projects are related to the client's attitude [31], which include lack of information, wrong beliefs, habitual thinking, reluctance to ask for advice, time pressures, negative attitudes, rapidly changing technology, and poor human relations. Other factors are related to the project, including time pressures, and poor coordination between the project team members. Time constraints due to unrealistic project contract periods increase the design and construction activity overlaps which results in slipped schedules, overrun cost, low quality, and delays in the project.

The client attitude is a predisposition to respond in a positive or negative way within the project. The client's lack of knowledge arises from the failure to get sufficient facts before starting the project or misunderstanding the full requirements of the original project plan. Moreover, clients are often very reluctant to seek advice from others in their field so sometimes their decisions are based on "educated guesses". In terms of age as a demographic characteristic, there is a positive relationship between seniority and performance because older persons have greater experience, resulting in higher skills and knowledge [32]. Low client experience results in a poor project output which means there is no clear direction from the client to the project team. The clients also need to have a high level of experience. Experience impacts on the skill level and project management knowledge being applied in the project. Clients with more experience have a greater range

of knowledge of project methods, tools and techniques to manage projects [29].

Technological change is another factor that affects the client outcomes. Technology changes rapidly in the development of processes, products and materials. Therefore, no one person can be expected to have completely current knowledge in any field. The lack of knowledge on technology or project management among clients might be improved by doing training courses, attending a conference or gaining a professional certificate related to construction projects [33].

Both good communication and the ability to operate under pressure in a complex environment were found to be important area in which clients needed to improve their skills [34]. In view of the importance of communication in projects, it is vital for clients to understand how communication processes work. Clients should understand how to maximize the potential benefits of communication and how to minimize the potential problems [35]. Several factors may disrupt the communication process as barriers to effective communication in the project. Client individual communication barriers may disrupt effective communication. One common problem is language difference; other problems include a lack of credibility about the subject, conflicting or inconsistent cues, a reluctance to communicate, poor listening skills, or predispositions about the subject. Paying less attention to communication will increase the conflicts among all the parties in a project.

IV. RESEARCH METHOD

For this study, a questionnaire survey was selected as the research method. There are three factors that distinguish the selection of research method [36]: the type of research question being asked; the control a researcher has over actual behavioral events; and the degree of focus on contemporary as opposed to historical events. The research question is a 'what' type of question that measures the prevalence of people's beliefs. It is also aimed at predicting outcomes, i.e. the influence of individual factors on client involvement. Yin [38] suggests that a survey is the preferred method for this type of question, and this has therefore been used in this study for answering this question. The development of the questionnaire followed Leedy [36] four practical guidelines, which are: using clear language, meeting research aims, planning development including distribution and collection, and creating a solid cover letter. Thus, in order to have clear language as well as clear understanding for the questionnaire, the survey was written in two languages (English and Arabic) which is appropriate for the participants. Close-ended questions with ordinal and nominal scales were employed. Instructions were also provided at the beginning of each section for completing the questionnaire.

The questionnaire consisted of two main parts. Part 1 (8 items) was designed to obtain some demographic information about the participants. Part 2 (19 items) was designed to identify the individual factors that influence

client involvement in construction projects, and project delivery expectation (4 items).

V. RESULTS

The questionnaire survey was distributed to 315 potential participants in 21 government agencies of the Kingdom of Saudi Arabia (KSA). Seventeen of the 21 (80.95%) agencies responded, with a total of 223 questionnaires (70.79%) were returned, giving the researcher more precision and more confidence in regard to understanding the sample population.

TABLE I
 RANKING OF EXISTING INDIVIDUAL FACTORS FROM (HIGHEST TO LOWEST)

Rank	Code	Individual Factors	Mean	Median	Std. Deviation
1	I_4	Getting a professional certificate related to projects	4.57	5	.624
2	I_2	Training courses	4.55	5	.792
3	I_6	Low client salary	4.55	5	.757
4	I_19	Technical, planning, organizing, and coordinating skills are very important for clients to be able to be more effective in a project	4.55	5	.634
5	I_14	Unfamiliarity with a construction project	4.48	5	.740
6	I_18	Good knowledge is influencing the teamwork, collaboration and effective communication	4.46	5	.702
7	I_5	Language differences disrupt effective communication	4.40	5	.740
8	I_7	Job satisfaction and overlapping in some project tasks that are not of related duties	4.37	5	.771
9	I_12	Inability to identify regulations and responsibilities within the project	4.24	4	.749
10	I_13	Unfamiliarity with project design	4.20	4	.786
11	I_1	More clients experience more quality in project involvement	4.11	4	.842
12	I_17	Emphasis on quick construction	4.03	4	.956
13	I_3	Attend international conferences	3.99	4	1.076
14	I_10	Inability to make appropriate decisions	3.92	4	.953
15	I_9	Poor human relations	3.90	4	.829
16	I_11	Inability to identify the basic requirements of the project in the first phase of the design	3.84	4	1.138
17	I_15	Emphasis on low construction cost	3.62	4	1.480
18	I_8	Increases in working hours	3.24	3	1.155
19	I_16	Emphasis on high quality of project	2.80	3	1.266

From the literature, as discussed in Section III, the individual factors include 19 items. Table 1 presents the mean values of the individual factors and the rankings from the most influential factors to the lowest. On the Likert scale, 12 factors were scaled from 4 to 5, six factors were scaled from 3 to 4, and one factor was scaled under 3. Based on the sample's responses, the 12 factors that had a strong effect on the client involvement in projects were: 1) getting a professional certificate related to projects; 2) getting training courses; 3) low client salary; 4) technical, planning, organizing and coordinating skills are very

important for clients to be able to be more effective in a project; 5) unfamiliarity with construction projects; 6) good knowledge influences the teamwork, collaboration and effective communication; 7) language differences disrupt effective communication; 8) job satisfaction and overlapping in some project tasks that are not of related duties; 9) inability to identify regulations and responsibilities within the project; 10) unfamiliarity with project design; 11) more clients experience more quality in project involvement; and 12) emphasis on quick construction.

Based on the questionnaire responses, the first five items had the most influence on client involvement. These five items, namely, professional certificate, good training, reasonable salary, developing skills, and unfamiliarity in construction projects, apply to most new engineers in the construction field. In general, it can be inferred that the 12 items ranked in the questionnaires are related to the knowledge development of the project members who can address these items by getting more training, developing skills, becoming familiar with project process and developing communication skills. As discussed previously, knowledge development in Saudi Arabia is weak and the country has been cited for the lack of real progress in achieving good management and organizational performance. This indicates some weakness in the employee training programs offered by the government agencies. Government agencies should be a model employer in developing their employees. Any specific program introduced by the government organization such as an employee training program is an important indicator of the value placed on employees. It can be used to transmit awareness to the employees about the important goals and objectives of the organization, the expected behavior, the various roles and extent of their responsibilities, and the communication networks. This might help to improve employee outcomes and project management and performance and would result in more effective client involvement in construction projects.

Explanatory Factor Analysis

EFA was applied to the data in order to understand and highlight any interesting relationships between the factors. Factor analysis is also a tool to extract information from large databases and identify the interrelated data [38]. In other words, it creates new combinations of variables as replacements for the original variables. The factor analysis was done for all 19 items that represented the individual factors as one group. SPSS for Windows (v21) was used. The Bartlett test of overall significance showed it to be significant (sig. = 0.000) and the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.687, which is greater than the required critical level of 0.5. Thus, it was appropriate to proceed with factor analysis. Since the objective of applying factor analysis was to reduce the original variance to a minimal number of factors, PCA was used to extract the factors. From the rotated component

matrix, five groups were generated and named. Table 2 presents the results generated from the factor analysis test.

TABLE I
 FACTOR ANALYSIS OF INDIVIDUAL FACTORS

Code	Individual Factors	Loading
Group 1: Low knowledge and experience lead to poor decision making in the early stage of design		
I_10	Inability to make appropriate decisions	.857
I_3	Attend international conferences	.836
I_9	Poor human relation	.742
I_11	Inability to identify the basic requirements of the project in the first phase of the design	.738
I_1	More clients experience more quality in project involvement	.719
Group 2: Inability to communicate clearly and weak in training with low knowledge lead to failure to identify the project regulations and responsibilities		
I_2	Training courses	.829
I_18	Good knowledge is influencing the teamwork, collaboration and effective communication	.768
I_5	Language difference disrupt effective communication	.711
I_12	Inability to identify regulations and responsibilities within the project	.639
Group 3: Low job satisfaction in leads to low client expectation		
I_17	Emphasis on quick construction	.754
I_7	Job satisfaction and overlapping in some project tasks that are not of related duties	.711
I_6	Low client salary	.661
I_4	Getting a professional certificate related to projects	.583
Group 4: Insufficient personal skills and long work hours lead to low client expectation		
I_15	Emphasis on low construction cost	.690
I_8	Increases in working hours	.679
I_16	Emphasis on high quality of project	.629
I_19	Technical, planning, organising and coordinating skills are very important for clients to be able to be more effective in project	.541
Group 5: Low expertise in design and construction		
I_13	Unfamiliarity with project design	.609
I_14	Unfamiliarity with a construction project	.529

The five groups identified in the analysis match some of the problems and obstacles in the Saudi construction sector highlighted by other sources. Many recent media reports have focused on the major delays in Saudi construction projects, with delays said to be caused by the clients [13], contractors and other factors [4, 16]. As discussed in the literature review (the problems faced in the Saudi construction projects; many of those problems resonate with the individual factors highlighted in this analysis.

- Group 1: Low knowledge and experience lead to poor decision making in the early stage of design.
- Group 2: Inability to communicate clearly and weak in training with low knowledge lead to failure to identify the project regulations and responsibilities.
- Group 3: Low job satisfaction in leads to low client expectation.

- Group 4: Insufficient personal skills and long work hours lead to low client expectation.
- Group 5: Low expertise in design and construction

VI. CONCLUSIONS

It is important to identify the dominant factors that lead to low client involvement in construction projects so that efforts can be concentrated on those factors in order to reduce them and improve the current practices. The client's contribution is critically important for the construction process and for taking the construction sector forward. Among the individual factors, the four most impacting factors were: professional certificate, good training, reasonable salary and skill development. These factors were identified as the features most needed by the clients as individuals in the construction sector. The individual factors were further summarized into five main groups, which are: Low knowledge and experience leads to insufficient decision-making in the early stage of design;

Inability to communicate clearly and weak training with low knowledge lead to failure to identify the project regulations and responsibilities; Low satisfaction with job and salary leads to low client expectations; Insufficient personal skills with long work hours lead to low client expectations; and Low expertise in design and construction

REFERENCES

Here are the examples of references format:

- [1] MEED, *Special Report Saudi Arabia*. Middle East Economic Digest, 2010. **54**(13): p. 33-33.
- [2] Samargandi, N., J. Fidrmuc, and S. Ghosh, *Financial development and economic growth in an oil-rich economy: The case of Saudi Arabia*. Economics and Finance Working Paper, 2013. **Brunel University**: p. 13-12.
- [3] United Nations Development Programme, *Arab Human Development Report*. 2009: New York.
- [4] Althynian, F., *An economic study reveals the reasons for the delay in the implementation of 82% of infrastructure projects in the Kingdom*, in *Alriyadh Newspaper*, Issue 15295 2010, Al-Yamama Press: Riyadh.
- [5] Anti-Corruption Commission, *820 billion SR put 3000 limping projects under the Focus*, in *Alriyadh Newspaper*. 2013: Riyadh.
- [6] Bubshait, A.A. and A.A. Al-Musaid, *Owner involvement in construction projects in Saudi Arabia*. ASCE Journal of Management in Engineering, 1992. **8**(2): p. 176-185.
- [7] Al-jarasha, Y., *Expert warns of waste of 93 billion riyals in government projects in the coming years*, in *Alriyadh Newspaper*, Issue 15409. 2010.
- [8] Kometa, S.T., P.O. Olomolaiye, and F.C. Harris, *A review of client-generated risks to project consultants*. International Journal of Project Management, 1996. **14**(5): p. 273-279.
- [9] Al-Sedairy, S.T., *Management of conflict : Public-sector construction in Saudi Arabia*. International Journal of Project Management, 1994. **12**(3): p. 143-151.
- [10] Assaf, S.A. and S. Al-Hejji, *Causes of delay in large construction projects*. International Journal of Project Management, 2006. **24**(4): p. 349-357.
- [11] Alnuaimi, A.S., et al., *Causes, effects, benefits, and remedies of change orders on public construction projects in Oman*. Journal of Construction Engineering and Management, 2009. **136**(5): p. 615-622.
- [12] United Nations Development Programme, *Arab Human Development Report*. 2003: New York.
- [13] Alsalam, S., *Government Entities bear part of the delay in the implementation of projects*, in *Alriyadh Newspaper*. 2013: Riyadh.
- [14] Love, P.E.D., A. Gunasekaran, and H. Li, *Concurrent engineering: a strategy for procuring construction projects*. International Journal of Project Management, 1998. **16**(6): p. 375-383.
- [15] Shen, Q., Li, H. , J. Chung, and P.Y. Hui, *A framework for identification and representation of client requirements in the briefing process*. Construction management and economics, 2004. **22**(2): p. 213-221.
- [16] Al-Kharashi, A. and M. Skitmore, *Causes of delays in Saudi Arabian public sector construction projects*. Construction Management and Economics, 2009. **27**(1): p. 3 - 23.
- [17] Ryd, N., *The design brief as carrier of client information during the construction process*. Design Studies, 2004. **25**(3): p. 231-249.
- [18] Xu, L. and Y. Miao, *Based on the owner of the construction project management research*, in *International Conference on Future Information Technology and Management Engineering*. 2010, IEEE. p. 384 - 386.
- [19] Forgues, D., *Increasing Client Capabilities Through Requirement Engineering*, in *International Conference on Computing and Decision Making in Civil and Building Engineering*. 2006: Montréal, Canada.
- [20] Jawahar-Nesan, L. and A.D.F. Price, *Formulation of best practices for owner's representatives*. Journal of Management in Engineering, 1997. **13**(1): p. 44-51.
- [21] Low, S.P. and Q. Chuan, *Environmental factors and work performance of project managers in the construction industry*. International Journal of Project Management, 2006. **24**(1): p. 24-37.
- [22] Toor, S.R. and S.O. Ogunlana, *Critical COMs of success in large-scale construction projects: evidence from Thailand construction industry*. International Journal of Project Management Decision, 2008. **26**: p. 420-30.
- [23] Bubshait, A.A., *Owner involvement in project quality*. International Journal of Project Management, 1994. **12**(2): p. 115-117.
- [24] Chan, A.P.C., D. Scott, and A.P.L. Chan, *Factors Affecting the Success of a Construction Project*. Journal of Construction Engineering and Management, 2004. **130**(1): p. 153-155.
- [25] Parker, S. and M. Skitmore, *Projet management turnover: causes and effects on project performance*. International Journal of Project Management, 2005. **23**: p. 205-214.
- [26] Shelbourn, M., et al., *Planning and implementation of effective collaboration in construction projects*. Construction Innovation: Information, Process, Management,, 2007. **7**(4): p. 357 - 377.
- [27] ASCE, *Quality in the constructed project : a guide for owners, designers, and constructors*. 3rd ed, ed. M.a.r.o.e.p.n. 73. 2012, Reston, Virginia: American Society of Civil Engineers. 266.
- [28] Sauter, V.L., *Competitive intelligence systems: qualitative DSS for strategic decision making*. SIGMIS Database, 2005. **36**(2): p. 43-57.
- [29] Nutt, P., *Comparing public and private sector decision-making practices*. Journal of Public Administration Research and Theory, 2006. **16**: p. 289-318.
- [30] Boyd, D. and E. Chinyio, *Understanding the Construction Client*. 2006, Oxford, UK: Blackwell Science.
- [31] Brockenbrough, R.L., *Highway engineering handbook : building and rehabilitating the infrastructure*. 3rd ed. 2009, New York: McGraw-Hill.
- [32] Al-Yahya, K.O., *Power-Influence in Decision Making, Competence Utilization, and Organizational Culture in Public Organizations: The Arab World in Comparative Perspective*. Journal of Public Administration Research and Theory, 2009. **9**(2): p. 385-407.
- [33] Sargeant, R., et al., *Creating value in project management using PRINCE2*. Queensland Univerisity of Technology, 2010. Brisbane.
- [34] White, D. and J. Fortune, *Current practice in project management -- an empirical study*. International Journal of Project Management, 2002. **20**(1): p. 1-11.
- [35] Tenopir, C. and D.W. King, *Communication patterns of engineers*. 2004: Wiley-IEEE Press.
- [36] Yin, R.K. (1994) *Case Study Research: Design and Methods*, Sage Publication, Inc., Thousand Oaks, CA.
- [37] Leedy, P., *Practical Research: Planning and Design*. 1997, New Jersey: Prentice-Hall.
- [38] Hair, j.f., et al., *Multivariate data analysis. A Global Perspective*. 7th ed. 2010, Upper Saddle River, N.J. : Pearson Education.