# Factors affecting the bid/no bid decision in the Palestinian construction industry

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## Abstract

**Purpose** – The purpose of this paper is to identify and rank the factors that affect the bid/no bid decision according to their relative importance from the perspective of the contracting parties operating in the Gaza Strip, Palestine.

**Design/methodology/approach** – The objectives of this research were investigated through a postal questionnaire, which covered a randomly selected sample of 63 contractors, 29 clients and 13 consultants operating in the construction industry in the Gaza strip. The questionnaire was structured based on related literature, the pilot study and actual factors affecting bidders' decisions to bid or not that arise from special conditions in the Gaza Strip. A total of 78 factors that affect the bid/no bid decision were identified. These factors were then ranked according to their relative importance to contracting parties operating in the Gaza Strip, Palestine.

**Findings** – The results illustrate that the financial capability of the contractors, the financial capability of the clients, the financial values of the project, the due date of the payments, the availability of construction raw materials in local markets, and the stability of the construction industry were the most critical factors affecting the bid/no bid decision, as agreed by all respondents.

**Originality/value** – The paper provides supportive practical solutions for contractors, clients and consultants to enhance and improve bidding decisions. It is recommended that clients and consultants consider the financial capabilities, technical capabilities and staff competencies of the contractors during the awarding stage, and not simply focus on the lowest bid.

**Keywords** Contracts, Consultants, Construction industry, Palestine

**Paper type** Research paper

## 1. Introduction

The construction industry is usually considered to be the back bone in any economy as it absorbs a relatively high percentage of the national workforce. In the UK, the construction industry (the second largest industry in the European Union) contributes around 8.2 per cent of gross value added and employs about 7 per cent of the local workforce, providing some 2.2 million jobs (AGCAS, 2008). Similarly, in the USA, the construction industry is considered to be the largest in the world accounting for 25 per cent of the total global construction industry (UK Trade and Investment Website, 2007). This industry adds approximately 1 billion square feet of commercial construction annually. In emerging economies, such as India, the industry is worth

Journal of Financial Management of Property and Construction
Vol. 15 No. 2, 2010
pp. 118-142

1366-4387
DOI 10.1108/13664381011063421

around USD 25 billion annually and accounts for more than 6 per cent of gross domestic product (GDP), employing 18 million people – the second largest employer after agriculture (UK Trade and Investment Website, 2007). Based on data from the Palestinian Central Bureau of Statistics (2006), it was found that the average contribution of the construction industry to Palestinian GDP ranged from 2.18 per cent to 2.68 per cent during the period from 2000 to 2006.

In Palestine, the construction industry is considered one of the main sectors that contribute strongly to the Palestinian economy. In 2007 alone, this industry employed 11.6 per cent from the local workforce. From the examples above, it is clear that a healthy economy is a function of the demand for construction work, as reflected by the number and value of procured construction projects. Given that most projects are awarded to contractors via tenders (competitive bidding), a contractor's survival is, therefore, strongly dependent on being able to successfully deal with different bidding situations. Various economic, social and political situations could dictate the number of construction firms registered and the degree of competition for construction works (Akintoye and Skitmore, 1990).

The contractor's decision to bid or not is usually associated with uncertainty and may be influenced by a plethora of factors. While some of these factors are related to the contractor, others are related to the client, the contract and the project characteristics, as well as the business environment. The objective of this paper is to identify and rank the factors that affect the bid/no bid decision according to their relative importance from the perspective of the contracting parties operating in the Gaza Strip, Palestine. The next section provides a summary of the literature review undertaken to identify the relevant factors, while the rest of the paper covers the research methodology and study findings.

## 2. Relevant previous studies

### *2.1 Overview*

Over the years, the bid/no bid decision has attracted the attention of many researchers. A relatively large number of studies have focused on identifying the factors affecting the decision, but few studies have investigated and developed relevant bidding strategy models. These previous research studies include: Odusote and Fellows (1992), Skitmore *et al.* (1993), Drew and Skitmore (1990, 1993), Eastham and Skitmore (1993), Sohail *et al.* (1999), Abdul-Hadi (1999), Stewart (2000), Drew *et al.* (2001), Wanous *et al.* (2003), Noumba and Dinghem (2007), Alexandersson and Hultén (2006) and Krasnokutskaya and Seim, 2007. Some of these researchers considered two or three categories of factors that may affect a contractor's decision to bid or not, while this research includes all factors that could relate to the Gaza Strip construction industry.

The identified factors could be categorised into four main groups. The first group relates to the contractor's characteristics, the second group relates to the clients, the third group relates to both contract and project characteristics, and the fourth group relates to external factors such as political situations and governmental regulations. Skitmore *et al.* (1993) argued that the decision to bid needs to be based on a comprehensive and intensive process of data collection and investigation of the internal and external factors. The internal factors relate to the organisational capabilities and resources, while the external factors relate to both market and project conditions. Krasnokutskaya and Seim (2007) stated that the firms' decision to

participate in the tender depends on two different costs: cost of entry and cost of completing the project. Abdul-Hadi (1999) categorised factors affecting bidding and markup decisions in Saudi Arabia into five categories: project characteristics, project documents, company characteristics, the bidding situation and the economic situation. In the Gaza Strip, Nirab (2007) identified 94 factors that affect bidding decisions and classified them into three categories: firm-related factors, project-related factors and market-related factors. The current research focuses on clients, with more detail than the three construction parties considered by Nirab (2007).

*2.2 Contractor-related factors*

Contractors' bidding decisions are influenced by several factors related to the contractors themselves. Some of these factors relate to a contractor's experience, financial capabilities, workload and the behaviour of competitors. Eastham and Skitmore (1993) proposed a method by which decisions may be made to participate in tendering for a project by considering the risks' influences. Odusote and Fellows (1992) showed that at any one time within a construction company there are contracts which are being undertaken and contracts which are being sought, usually in a competitive environment. Wanous *et al.* (2003) described and developed a simple parametric model to test a novel bid/no bid decision in the construction industry in Syria.

Drew and Skitmore (1993) classified the factors that influence bidding behaviour into three groups: the first group related to the behaviour of contractors, the second group related to the individual contractor's behaviour and the third group related to the contractor's behaviour toward the characteristics of the contract. Flanagan and Norman (1982) (cited in Drew *et al.*, 2001) stated that bidding behaviour, in general terms, is likely to be affected by the following five major factors: the size and value of the project, and construction and managerial complexity required to complete it; the regional market conditions; the current and projected workload of the tenderer; the type of client; and the type of project. Skitmore (2002) explained that there are a variety of reasons why tenderers may prefer not to bid for a particular contract. These include bids in hand, the strength of the competition, low projected profit levels, the cost of bidding and a short period allowed for bid preparation. Drew and Skitmore (1992) observed that the project profitability; the number and value of bids in hand; the availability of the contractor's staff; the technical capabilities of the contractor during the implementation of the works (construction methods); and the ability of the architects or designers are critical factors influencing the decision to participate in a new tender or not.

Stewart (2000) emphasised that much of the work on strategic management is based on the assumption that companies seek to earn profit or maximise returns to shareholders. Dijik (1999) stated that bidders could be faced with the problem that making a bid involves costs, which means the estimation of the margin of profit may affect the bidding decision. Krasnokutskaya and Seim (2007) stated that the probability of submitting a bid increases significantly with the firm's capabilities. Large firms have a strong trend to participate in large-sized projects. Sohail *et al.* (1999) analysed the factors that affect the bidders' participation. Their survey revealed that 88 per cent of contractor respondents believed that technical competency, the legal status of the contractor, experience with similar projects, competencies of staff and managerial capabilities are important factors for the contractor to participate strongly in tenders.

*2.3 Client characteristics*

The client's policies and characteristics such as their selection system, awarding criteria, advertisement characteristics, tendering system, reputation and others affect the contractor's bid/no bid decision. Drew and Skitmore (1997) emphasised that the character of construction markets is set by several factors, including the nature of the client and the type of competition experienced by the construction firm. Drew *et al.* (2001) also concluded that three important factors influence a contractor's bidding behaviour: the type of client, the type of construction work and the size of construction work. Krasnokutskaya and Seim (2007) illustrated the influence of the tender advertisement procedures for the benefit of clients and contractors. Bluestein (2005) explained that newspaper advertisements could be published electronically for wider viewing. The client policy of inviting the categories, client reputation, transparency, credibility, client experience and many other factors were studied by several researchers, including: Drew and Skitmore (1992), Hatush and Skitmore (1998), Jennings and Holt (1998), Mills and Skitmore (1999a, b), Egemen and Mohamed (2005), Banaitiene and Banaitis (2006), El Sawalhi *et al.* (2007) and Straub and Mossel (2007).

*2.4 Contract and project characteristics*

Several factors related to the contract and project characteristics affect the contractors' decisions to bid or not. Drew and Skitmore (1992, 1997) concluded that the contract conditions, site conditions, construction methods and program, market conditions and the identity of other participating bidders are critical factors influencing the decision to participate or not. Krasnokutskaya and Seim (2007) identified a number of factors that have an impact on bidding behaviours, such as: working days, number of bidders participating in the tender, distance to the project, current load and the availability of qualified small business. Noumba and Dinghem (2007) revealed that the efforts, resources and time spent to review and fill the bids will influence a bidder's strategy to contribute in future with similar projects or not. Krasnokutskaya and Seim (2007) showed that contract requirements have an influence on bidding behaviours, and that lower bidders prefer small-sized projects with a long duration. This suggests that small companies are primarily interested in smaller-scale projects that require limited resources and longer projects that provide steady business. Stone and Reiners (1954) (cited in Warsame, 2006b) draw a connection between the size of the contract and the size of contractors. They state that only the largest firms normally undertake the largest contracts, while both small and large firms undertake the small contracts. Eastham and Skitmore (1993) emphasised that the project and contract characteristics are critical factors affecting the bidder's decision of participation.

*2.5 External environment*

Contractors' bidding decisions are also affected by external environmental conditions such as the number of competitors in the market, the strength of the competitors, the stability of the construction industry, governmental regulations, weather conditions and others. Newcombe *et al.* (1990) showed that the construction environment where contractors operate consists of general environmental factors, such as politics and laws, economics, sociology and technology, as well as competitive environmental factors such as finance, plant, labour, management, suppliers, subcontractors, consultants and clients.

Hong and Shum (1999) stated that an increase in the number of bidders has two counteracting effects on equilibrium bidding behaviours. First, the increased competition leads to more aggressive bidding, as each bidder tries to maintain their chances of winning against more rivals – this is called competitive effect. Second, as the number of bidders increases, rational bidders will bid less aggressively in response – this is called winner's curse effect. If the winner's curse effect is large enough, the possibility arises that prices will rise. Hong and Shum (1999) found that the costs of procurement auctions increased by 30 per cent as the number of bidders increased from three to six. Athey *et al.* (2004) observed that competition with unknown bidders (e.g. using sealed envelopes) attracts more bidders than the open auctions and generated higher revenue.

## 3. Research methodology

In this research, a questionnaire was used to collect factual and perceptive responses and measure attitudes regarding the factors that affect bidders' decisions to bid or not. Fellows and Liu (1997) and Naoum (1998) argued that the questionnaire is a widely used approach for descriptive and analytical surveys to find out the facts, opinions and views of respondents. Three populations were targeted in this research. The first population was comprised of Palestinian Contractors Union (PCU) categories classified under the building categories in the Gaza Strip. These categories are first, second, third, fourth and fifth building categories that have valid registration (170 companies). The second population was clients (40) and the third population was consultants (15).

The first draft of the questionnaire was developed by reviewing the related literature, including Abdul-Hadi (1999), Drew and Skitmore (1993), Eastham and Skitmore (1993), Alexandersson and Hultén (2006), Krasnokutskaya and Seim (2007), Nirab (2007) and others. In addition, the questionnaire was modified and amended based on expert comments and the pilot study output, with some questions customised to achieve the best outcome for this research.

The final draft of the questionnaire was structured to include four groups of factors with 78 factors in total to be ranked by respondents. The objective of this study was to obtain from the arrangements of the questionnaire structure (See Appendix) clients' perceptions regarding the optimal number of bidders to achieve the best range of competitiveness.

To determine the sample size for each population of contractors, clients and consultants, the Kish (1965) equation was used. Assaf *et al.* (1999, 2001) and Abdul-Hadi (1999), among others, used this equation:

$$n = n' / \left[1 + \left(n'/N\right)\right]$$

where, $n'$ is the sample size from infinite population, which can be calculated from this formula: $[n' = S^2/V^2]$. The definitions of all variable can be defined as the following:

- $n$ = sample size from finite population.
- $N$ = total population (170 contractors, 40 clients and 15 consultants).
- V = standard error of sample population equal to 0.05 for the confidence level 95 per cent, t = 1.96.

$S^2$ = standard error variance of population elements, $S^2 = P(1 - P)$; maximum at $P = 0.5$.

The sample size for the contractor and client populations can be calculated from the previous equations as follows:

$$n' = S^2V^2 = (0.5)^2/(0.05)^2 = 100$$

$$n_{\text{Contractors}} = \left[\frac{100}{1 + \left(\frac{100}{170}\right)}\right] = 63 \text{ companies}$$

$$n_{\text{Clients}} = \left[\frac{100}{1 + \left(\frac{100}{40}\right)}\right] = 29 \text{ clients}$$

$$n_{\text{Consultans}} = \left[\frac{100}{1 + \left(\frac{100}{15}\right)}\right] = 13 \text{ consultants}$$

Although the calculated sample size was 63 for contractors, 29 for clients and 13 for consultants, 73 questionnaires were distributed for contractors, 35 were distributed for clients and the calculated sample size was distributed for consultants. This corrective process was applied to overcome a low response rate that threatened to disturb the consistency and the benefits of the study. The response rate was 89.05 per cent for contractors, 80 per cent for clients and 85 per cent for consultants.

The Kolmogorove-Smirnov test was used to determine if the data followed normal distribution. Moreover, one way analysis of variance (ANOVA) test was used to measure the difference in the means for the three categories of opinion (contractor, client and consultant) at significance level $\alpha = 0.05$.

One hypothesis that was tested in this research related to the respondents' agreement regarding the most important factors affecting contractors' bid/no bid decisions.

*Hypothesis*

Respondents' opinions regarding the factors affecting a bidder's participation in the construction tenders at significance level $\alpha = 0.05$:

*H0.* There are no differences in the opinions of clients, consultant and contractors regarding the factors affecting a bidder's participation in the construction tenders at significance level $\alpha = 0.05$.

A total of 78 factors affecting bidders' decisions to bid or not were identified and categorised into four groups (Hatush and Skitmore, 1997; Abdul-Hadi, 1999; Drew and Skitmore, 1993; Eastham and Skitmore, 1993; Sohail *et al.*, 1999; Skitmore *et al.*, 2000; Skitmore, 2002; Wanous *et al.*, 2003; Noumba and Dinghem, 2007; Alexandersson and Hultén, 2006; Krasnokutskaya and Seim, 2007). The first group summarises the factors related to the contractors themselves (capabilities, competencies, strategies and relations) that affect their decisions to bid or not. The second group relates to the client's policies and characteristics that affect a contractor's decision to bid or not. The third group relates to the contract and project characteristics and the fourth group relates to the external environmental factors.

The respondents were asked to give their perceptions regarding the factors affecting the bidding process using a five-point scale (from "1" for strongly disagree to "5" for strongly agree). The relative importance index (RII) was calculated using the following equation (Naoum, 1998; Assaf *et al.*, 1999, 2001; Abdul-Hadi, 1999; Wanous *et al.*, 2003):

$$\text{Relative importance index (RII)} = \frac{\sum w}{AN} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

where:

$W$ is the weighting given to each factor by the respondent, ranging from 1 to 5;

$n_1 =$ number of respondents for strongly disagree;

$n_2 =$ number of respondents for disagree;

$n_3 =$ number of respondents for neutral;

$n_4 =$ number of respondents for agree;

$n_5 =$ number of respondents for strongly agree;

$A$ is the highest weight (i.e. 5 in the study);

$N$ is the total population; and

The RII ranges from 0 to 1.

## 4. Results and discussion

### *4.1 Factors related to the contractor (Group one)*

Table I shows 18 factors that are related to the contractors and affect their decision to bid or not. All respondents (contractors, clients and consultants) were asked to indicate their agreement regarding these factors on a scale of 1 to 5. The RII of the factors are calculated individually.

From Table I, it is observed that "The financial capabilities of the contractors" was ranked in the first position by the clients, consultants and contractors with relative important indices of 0.904, 0.891 and 0.889, respectively. The overall rank for this factor was also in first position with a RII 0.894. High index values reflect strongly the importance of the financial capabilities for contractors to be able to continue in the construction industry. The results demonstrate that contractors who do not have sufficient financial capability will not be able to attain clients, consultants or project requirements. In addition, the contractor who is financially weak will not be strong enough to compete in the tenders. These results are in line with Krasnokutskaya and Seim (2007), Abdul-Hadi (1999), Drew and Skitmore (1992), Jennings and Holt (1998) and Banaitiene and Banaitis (2006) and reflect the importance of the financial capabilities for the contractor to remain active in the industry.

"Experience in similar projects" was ranked second by all respondents with a RII of 0.829. Clients ranked this factor fourth with a RII of 0.830, consultants ranked this factor third with a RII of 0.855, and contractors ranked this factor fourth with a RII of 0.822. The importance of this factor from the respondents' point of view could be traced to the experience that the contractors gained through their direct contact with a similar type of works and similar conditions. In addition, experience in similar projects will

| No. | Factors related to the contractor that affects his/her decision to bid or not | Client | | Consultant | | Contractor | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | RII | Rank | RII | Rank | RII | Rank | RII | Rank |
| 1 | Financial capabilities of the contractor | 0.904 | 1 | 0.891 | 1 | 0.889 | 1 | 0.894 | 1 |
| 2 | Experience in similar projects | 0.830 | 4 | 0.855 | 3 | 0.822 | 4 | 0.829 | 2 |
| 3 | Experiences and competencies of the contractor's staff | 0.785 | 8 | 0.836 | 4 | 0.834 | 3 | 0.823 | 3 |
| 4 | Specific features that provide competitive advantages to the contractor, such as the ability to make vertical integration | 0.837 | 3 | 0.873 | 2 | 0.806 | 6 | 0.823 | 3 |
| 5 | Contractor's category in PCU | 0.748 | 13 | 0.891 | 1 | 0.837 | 2 | 0.821 | 4 |
| 6 | Availability of equipment owned by contractor | 0.852 | 2 | 0.855 | 3 | 0.797 | 8 | 0.819 | 5 |
| 7 | Relationship between the contractor and the banks (expected bank facilities) | 0.822 | 5 | 0.855 | 3 | 0.800 | 7 | 0.813 | 6 |
| 8 | Previous relationship and communication level with the clients | 0.763 | 11 | 0.818 | 5 | 0.809 | 5 | 0.800 | 7 |
| 9 | Expected and planned profits for the project | 0.793 | 7 | 0.836 | 4 | 0.791 | 10 | 0.798 | 8 |
| 10 | Administrative skills, technical skills and experience of the contractor's project manager | 0.778 | 9 | 0.818 | 5 | 0.794 | 9 | 0.794 | 9 |
| 11 | Bids in hand | 0.807 | 6 | 0.836 | 4 | 0.748 | 14 | 0.775 | 10 |
| 12 | Contractor's culture – how, when and why to deal with the clients | 0.756 | 12 | 0.800 | 6 | 0.772 | 12 | 0.773 | 11 |
| 13 | Number of previously executed projects by the contractor | 0.770 | 10 | 0.709 | 9 | 0.775 | 11 | 0.769 | 12 |
| 14 | Importance of the project to the contractor | 0.748 | 14 | 0.709 | 9 | 0.769 | 13 | 0.760 | 13 |
| 15 | Contractor's competitive strategy | 0.726 | 15 | 0.745 | 7 | 0.745 | 15 | 0.742 | 14 |
| 16 | Risk taken and expected | 0.726 | 14 | 0.745 | 7 | 0.717 | 16 | 0.725 | 15 |
| 17 | Relationship between the contractor and the subcontractors | 0.689 | 16 | 0.673 | 10 | 0.692 | 17 | 0.692 | 15 |
| 18 | Contractor's ability to make sustainable or temporary joint venture | 0.689 | 16 | 0.727 | 8 | 0.668 | 18 | 0.683 | 16 |
| | Overall average | 0.779 | | 0.804 | | 0.781 | | 0.785 | |

**Table I.**
RII and ranks (R) for factors related to contractors

strengthen a contractor's decision to participate strongly as he or she is familiar with the system of works and the project environments. Previous experience will also strengthen the competitive position for the contractor. This factor was ranked second by Nirab (2007) with a RII of 0.803. The consistency in these results reflects that experience in previous similar projects will strengthen the managerial, technical and financial capabilities of the contractor and allow him or her to bid and compete with high level of satisfaction. Drew and Skitmore (1992) agreed with these results and emphasised that the projects performed in the past will strongly support a contractor's decision to bid in similar projects.

"The experiences and competencies of the contractor's staff" was ranked third overall by all respondents with a RII of 0.823. The clients ranked this factor eighth with a RII of 0.785. The consultants ranked this factor fourth with a RII of 0.836, while the contractors ranked it third with a RII of 0.834. This factor was ranked seventh by Nirab (2007) with a RII of 0.678. The deviation between Nirab's (2007) findings and these results could be as a result of the different categories targeted in the two studies. The current research targeted contractors from the building industry only, while Nirab (2007) targeted all categories classified in the PCU, including building, infrastructure and electro-mechanical contractors. Mixing these categories could result in this deviation. Moreover, the characteristics of each type of work may necessitate different competencies and experience for a contractor's staff.

"The contractor's ability to make sustainable or temporary joint venture" and "The relationship between the contractor and the subcontractors" were ranked as the least important factors affecting contractors' bid decisions with a RII of 0.692 and 0.683, respectively. These results could be as a result of the fact that sustainable or temporary joint ventures may not be strongly adopted in the Gaza strip due to the small size of projects and the regulations, restrictions and roles of clients. The results also reflect the clients' belief that the weak influence of the relationship between the contractors and the subcontractors affects a contractor's decision to bid or not. This may be traced to the nature of the relationship between contractors and subcontractors, which is based on temporary mutual benefits rather than long-term benefits. These results were very different from those obtained by Felsö *et al.* (2005) and Stephens *et al.* (1999), who showed the benefits of joint ventures in the construction environment.

### *4.2 Factors related to the client (Group two)*

A total of 26 factors were investigated in this group. As illustrated in Table II, the results revealed that "The financial capabilities of the client" was ranked first overall by the aggregated respondents with the highest RII of 0.921. The clients and consultants ranked this factor in first position with a RII of 0.919 and 0.945, respectively, while the contractors ranked this factor second with a RII of 0.917. These results illustrate the importance of a client's financial capability in attracting contractors to participate and bid with confidence. Clients with strong financial capabilities will be able to make payments to contractors on time, which builds mutual trust and confidence between the parties. These results are in accordance with those obtained by Wanous *et al.* (2003), where respondents ranked this factor second with a RII of 0.777. Moreover, these results are relatively close to those of Nirab (2007), who found this factor in first position with a RII of 0.870. The results obtained are also in line with Abdul-Hadi (1999), which reflected

| No. | Factors related to the client that affects the contractor's decision to bid or not | Client | | Consultant | | Contractor | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | RII | Rank | RII | Rank | RII | Rank | RII | Rank |
| 1 | Financial capabilities of the client | 0.919 | 1 | 0.945 | 1 | 0.917 | 2 | 0.921 | 1 |
| 2 | Reputation of the client | 0.874 | 2 | 0.942 | 2 | 0.931 | 1 | 0.918 | 2 |
| 3 | Payment policy | 0.844 | 4 | 0.909 | 3 | 0.886 | 3 | 0.877 | 3 |
| 4 | Client's policy to adopt the advanced payment for contractors | 0.859 | 3 | 0.880 | 4 | 0.837 | 5 | 0.849 | 4 |
| 5 | Client's policy for compensation | 0.807 | 6 | 0.836 | 5 | 0.843 | 4 | 0.835 | 5 |
| 6 | Previous relationship and communication level with the contractor | 0.793 | 7 | 0.818 | 6 | 0.825 | 7 | 0.817 | 6 |
| 7 | Experiences and competencies of the client's staff | 0.785 | 9 | 0.818 | 6 | 0.828 | 6 | 0.817 | 6 |
| 8 | The client's requirement from the contractors (financial, technical and administrative) | 0.793 | 8 | 0.782 | 9 | 0.812 | 8 | 0.806 | 7 |
| 9 | Project source of funding | 0.837 | 5 | 0.740 | 12 | 0.760 | 12 | 0.781 | 8 |
| 10 | The client's level of supervision, restriction, monitoring and control over the contractors | 0.785 | 9 | 0.818 | 6 | 0.766 | 11 | 0.779 | 9 |
| 11 | Client's policy in resolving disputes and litigations | 0.756 | 12 | 0.760 | 10 | 0.782 | 9 | 0.775 | 10 |
| 12 | Number of previous advertised projects by the client | 0.726 | 13 | 0.836 | 5 | 0.769 | 10 | 0.767 | 11 |
| 13 | Criteria of contractor's selection | 0.778 | 10 | 0.745 | 11 | 0.742 | 15 | 0.754 | 12 |
| 14 | Quality level that the client asks for | 0.778 | 10 | 0.673 | 14 | 0.751 | 14 | 0.752 | 13 |
| 15 | Client's evaluation and awarding policy | 0.770 | 11 | 0.800 | 7 | 0.717 | 16 | 0.740 | 14 |
| 16 | Targeted categories by the client | 0.756 | 12 | 0.800 | 8 | 0.717 | 16 | 0.735 | 15 |
| 17 | Adopting FIDIC system in the contractual agreement | 0.681 | 14 | 0.618 | 17 | 0.754 | 13 | 0.719 | 16 |
| 18 | Type of tendering system (open, restricted, pre-qualification or other systems) | 0.644 | 15 | 0.727 | 13 | 0.742 | 15 | 0.713 | 17 |
| 19 | Currency paid by client (dollars, Shequle, Euro, JD or other) | 0.600 | 19 | 0.745 | 11 | 0.751 | 14 | 0.710 | 18 |
| 20 | Way of advertisement (newspaper, post board, PCU web site or other) | 0.637 | 16 | 0.636 | 16 | 0.665 | 18 | 0.658 | 19 |
| 21 | Client's safety requirements | 0.607 | 18 | 0.618 | 18 | 0.680 | 17 | 0.654 | 20 |
| 22 | Advertisement duration for the tender | 0.585 | 20 | 0.655 | 15 | 0.655 | 18 | 0.637 | 21 |
| 23 | Types of annual advertised projects by the client | 0.622 | 17 | 0.618 | 17 | 0.628 | 20 | 0.625 | 22 |
| 24 | Number of annual advertised projects by the client | 0.600 | 19 | 0.600 | 19 | 0.634 | 19 | 0.621 | 23 |
| 25 | Adopting the e-tendering policy by the client | 0.511 | 22 | 0.600 | 19 | 0.628 | 20 | 0.594 | 24 |
| 26 | Address of the client offices (where tenderers submit bids if it is not electronically tendered) | 0.541 | 21 | 0.564 | 20 | 0.560 | 21 | 0.558 | 25 |
| | Overall average | 0.726 | | 0.751 | | 0.753 | | 0.747 | |

**Table II.**
RII and ranks (R) for factors related to clients

the importance of the financial capabilities of the client as a motivational factor to improve the bidding environment overall.

"The reputation of the clients" was ranked second by the aggregated respondents with a RII of 0.918. The clients and consultants ranked this factor second with a RII of 0.874 and 0.941, respectively, while the contractors ranked this factor first, with a RII of 0.931. These results clearly illustrate the influence of reputation on the relationships between parties, and the level of trust that could be established. The results obtained are higher than those obtained by Wanous *et al.* (2003) who ranked this factor third with RII of 0.768. The results also correspond with Dijik (1999) and Skitmore and Picken (2000).

"The payment policy" was ranked third by the aggregated respondents with a RII of 0.877. The consultants and contractors ranked this factor third with a RII of 0.909 and 0.886, respectively, while the clients ranked this factor fourth with a RII of 0.844. These results strongly reflect that contractors are in critical need of an easy payment system in order to sustain the business. The due date to pay the instalment or the payment will affect the contractor's arrangement to buy materials, pay salaries and meet other expenditure during the progression of the project. This result suggests guidance for clients to minimise the payment times as much as possible for contractors, which could be expected to enhance the bidding process and establish a relationship based on mutual trust and cooperation. These results are relatively close to those obtained by Nirab (2007), who found this factor in the first position with a RII of 0.870.

"The client's policy to adopt advanced payment for contractors" was ranked fourth by the aggregated respondents with a RII of 0.849. The clients ranked this factor third with a RII of 0.859, the consultants ranked it fourth with a RII of 0.880 and the contractors ranked it fifth with a RII of 0.837. This result strongly reflects that clients are fully aware of the importance of advanced payment for contractors. An advanced payment could facilitate and promote a contractor's decision to bid with this client. The policy of the advanced payment has been adopted by some clients in the Gaza Strip (such as the United Nations Relief and Works Agency (UNRWA) and the non-governmental organization (NGO) NGO Development Center) as a supportive approach that will increase the bidders' likelihood to bid. In addition, an advanced payment policy will provide financial security for the contractors amid the bad economic situation in the Gaza Strip.

"Adopting e-tendering policy by clients" and "The client's base/address" were ranked as the least important factors by all respondents with a RII of 0.594 and 0.558, respectively. The clients ranked these factors 22nd and 21st, respectively, with a RII of 0.511 and 0.541. The consultants ranked these factors 19th and 20th with a RII of 0.600 and 0.564, respectively, while the contractors ranked these factors 20th and 21st with a RII of 0.628 and 0.560, respectively. This conclusion emphasises that contractors are willing to participate in a tender when the client is financially capable and has good reputation, regardless of his or her address. Ranking e-tendering in last position reflects that clients have not been strongly satisfied with the e-tendering process as a motivational and supportive system for enhancing the bidding process. The result indicates that clients, consultants and contractors need to understand e-tendering as a key enabler for success. The clients' perspectives are quite different from those of the NSW Government (2002, 2008) and Betts *et al.* (2006) where they emphasised the benefits of e-tendering for the bidding environments and construction industry.

*4.3 Factors related to contract and project characteristics (Group three)*

A total of 19 factors within this group were investigated. As shown in Table III, the results revealed that "The financial value of the project" was ranked by the aggregated respondents in first position with a RII of 0.858. The clients and contractors ranked this factor first with a RII of 0.852 and 0.863, respectively, while the consultants ranked this factor second with a RII of 0.855. These results indicate that the contractors may have a strong trend to participate in projects that are within their financial capabilities; for instance, the large contractors prefer large-sized projects while the small contractors prefer the small-sized projects. Nirab (2007) reported this factor in first position regarding project conditions with a RII of 0.868. These results are compatible with Krasnokutskaya and Seim (2007) who showed that small companies are primarily interested in smaller-scale projects that require limited resources and longer projects that provide steady business. Stone and Reiners (1954) (cited in Warsame (2006b)) draw a connection between contract size and the size of contractors since the largest firm normally undertakes the largest contracts, and both small and large firms undertake the small contracts.

"The due date of the payment" as referred to in the contract document was ranked second by the aggregated respondents with a RII of 0.845. The clients and contractors

| No. | Factors related to contract and project characteristics | Client RII | Client Rank | Consultant RII | Consultant Rank | Contractor RII | Contractor Rank | Total RII | Total Rank |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Financial value of the project | 0.852 | 1 | 0.855 | 2 | 0.863 | 1 | 0.858 | 1 |
| 2 | Due date of the payments (after one month, two months or other) | 0.844 | 2 | 0.891 | 1 | 0.835 | 2 | 0.845 | 2 |
| 3 | Clarity of the contract clauses | 0.770 | 4 | 0.745 | 7 | 0.828 | 3 | 0.806 | 3 |
| 4 | Clarity of the drawings, and especially the detailed drawing | 0.778 | 3 | 0.800 | 4 | 0.772 | 6 | 0.779 | 4 |
| 5 | Duration of the project | 0.770 | 4 | 0.782 | 5 | 0.778 | 5 | 0.777 | 5 |
| 6 | Location of the project | 0.778 | 3 | 0.836 | 3 | 0.744 | 7 | 0.763 | 6 |
| 7 | Presence of the value of additional taxes (VAT) | 0.719 | 6 | 0.764 | 6 | 0.784 | 4 | 0.763 | 6 |
| 8 | Complexity of the project | 0.770 | 4 | 0.764 | 6 | 0.734 | 9 | 0.750 | 7 |
| 9 | Type of project (construction building works, maintenance, repair works) | 0.778 | 3 | 0.764 | 6 | 0.716 | 10 | 0.736 | 8 |
| 10 | Fixed bid bond motivates the participation rather than percentage bid bond | 0.667 | 10 | 0.673 | 10 | 0.741 | 8 | 0.713 | 9 |
| 11 | Type of contract (cost, lump sum, unit price) | 0.726 | 5 | 0.673 | 10 | 0.681 | 13 | 0.691 | 10 |
| 12 | Bid bonds (tender security deposit) | 0.689 | 8 | 0.709 | 8 | 0.688 | 12 | 0.689 | 11 |
| 13 | Liquidated damages | 0.674 | 9 | 0.618 | 12 | 0.703 | 11 | 0.689 | 11 |
| 14 | Value of insurances | 0.711 | 7 | 0.673 | 10 | 0.663 | 14 | 0.676 | 12 |
| 15 | Looting system in the tender | 0.600 | 14 | 0.582 | 13 | 0.628 | 15 | 0.616 | 13 |
| 16 | Tender fees | 0.659 | 11 | 0.691 | 9 | 0.581 | 16 | 0.614 | 14 |
| 17 | English language of the contract | 0.593 | 15 | 0.691 | 9 | 0.575 | 17 | 0.592 | 15 |
| 18 | Arabic language of the contract | 0.652 | 12 | 0.636 | 11 | 0.547 | 19 | 0.584 | 16 |
| 19 | Size of the tender documents (number of pages, drawing) | 0.615 | 13 | 0.545 | 14 | 0.563 | 18 | 0.575 | 16 |
| | Overall average | | 0.718 | 0.721 | | 0.706 | | 0.711 | |

**Table III.**
RII and ranks (R) for factors related to contract and project characteristics

ranked this factor second with a RII of 0.844 and 0.835, respectively, while the consultants ranked this factor first with a RII of 0.835. This clearly illustrates the influence of the due date for a contractor's survival and their strategic decisions during the bidding process. The procedures and policies in issuing the interim or final payments may differ from one contractual system to another. For instance, the UNRWA's Building Contract (2008) shows that payments should be made to the contractor or their representative within 20 days after receipt by the director of works of the correct amount (article 12, item d/BC/10). The International Federation of Consulting Engineers (FIDIC) (1999) showed that the payment will be within 28 days after receiving a statement and supporting documents (article 14.6). Nirab (2007) also reported this factor in the second position with regard to project conditions with a RII of 0.829. These results and comparisons reflect the importance of this factor.

"The clarity of the contract clauses" was ranked third by the aggregated respondents with a RII of 0.806. The clients ranked this factor third with a RII of 0.770, the consultants ranked it seventh with a RII of 0.745, and the contractors ranked it third with a RII of 0.828. Ranking this factor in a high position, especially by contractors, reflects that contractors are gradually improving and developing, and continuously learning about the importance of the contract document overall The results obtained are in line with those obtained from Drew and Skitmore (1992, 1997), who explained that contract conditions and project complexity are critical factors influencing a contractor's involvement in the bidding stage.

"The clarity of the drawings, especially the detailed drawing" was ranked fourth by the aggregated respondents with a RII of 0.779. The clients ranked this factor third with a RII of 0.778, the consultants ranked it fourth with a RII of 0.800 and the contractors ranked it sixth with a RII of 0.772. This result shows how critical these factors are in affecting a contractor's decision to bid or not. The results reflect that more precise and accurate drawings are more attractive for contractors when considering whether to bid. Moreover, this result illustrates that the characteristics of the project and contract influences a contractor's decisions to bid or not. The results obtained are in line with Eastham and Skitmore (1993) who emphasised that the project and contract characteristics are critical factors affecting a bidder's decision of participation.

"The English language of the contract", "The Arabic language of the contract" and "The size of tender documents", were ranked by all respondents in the last three positions with a RII of 0.592, 0.584 and 0.575, respectively. The results illustrate that clients are not convinced that these factors will affect a contractor's decision to bid or not. The obtained results do not correlate strongly with Schoenherr and Mabert (2007), who concluded that this lotting or bundling system could be attractive to potential bidders and have a significant impact on a bidder's trends during the bidding stage.

*4.4 External environmental factors (Group four)*

A total of 15 factors were investigated within this group. As illustrated in Table IV, the results indicated that "The availability of the required raw materials in local markets" was ranked in first position by the aggregated respondents with a RII of 0.921. The clients and consultants ranked this factor first with a RII of 0.926 and 0.964, respectively, while the contractors ranked this factor second with a RII of 0.911. These results indicate that from the clients', consultants' and contractors' point of view, contractors have a trend to participate in projects where the construction raw materials

| No. | Factors related to the external environment | Client RII | Client Rank | Consultant RII | Consultant Rank | Contractor RII | Contractor Rank | Total RII | Total Rank |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Availability of the required raw material in local markets | 0.926 | 1 | 0.964 | 1 | 0.911 | 2 | 0.921 | 1 |
| 2 | Stability of the construction industry | 0.889 | 3 | 0.909 | 3 | 0.914 | 1 | 0.908 | 2 |
| 3 | Stability of the political situation | 0.911 | 2 | 0.891 | 4 | 0.898 | 3 | 0.902 | 3 |
| 4 | Stability of the economic situation | 0.881 | 4 | 0.927 | 2 | 0.874 | 5 | 0.883 | 4 |
| 5 | Stability of currency exchange rate | 0.859 | 5 | 0.836 | 7 | 0.895 | 4 | 0.879 | 5 |
| 6 | Competencies and capabilities of the competitors | 0.815 | 7 | 0.855 | 6 | 0.822 | 7 | 0.825 | 6 |
| 7 | Number of competitors in the market | 0.770 | 10 | 0.836 | 7 | 0.831 | 6 | 0.817 | 7 |
| 8 | Awareness of the competitors' identities | 0.741 | 12 | 0.873 | 5 | 0.818 | 8 | 0.804 | 8 |
| 9 | Availability (ampleness) of projects by the clients at the same time | 0.830 | 6 | 0.836 | 7 | 0.772 | 11 | 0.794 | 9 |
| 10 | Governmental regulations and statutes that are integrated in the construction industry | 0.793 | 8 | 0.782 | 8 | 0.791 | 9 | 0.792 | 10 |
| 11 | Awareness of the number of competitors in the tenders | 0.748 | 11 | 0.782 | 8 | 0.775 | 10 | 0.769 | 11 |
| 12 | The taxes and other financial requirements on each tender | 0.778 | 9 | 0.782 | 8 | 0.742 | 13 | 0.758 | 12 |
| 13 | Classification criteria for the contractors by the PCU | 0.726 | 12 | 0.727 | 9 | 0.745 | 12 | 0.740 | 13 |
| 14 | Weak barriers to penetrate the market by a new competitor | 0.652 | 13 | 0.618 | 11 | 0.692 | 14 | 0.677 | 14 |
| 15 | Local climate (probability to participate in the tenders in the spring and seasons is higher than winter and autumn) | 0.644 | 14 | 0.636 | 10 | 0.677 | 15 | 0.663 | 15 |
| | Overall average | 0.798 | | 0.817 | | 0.810 | | 0.809 | |

**Table IV.**
RII and ranks (R) for factors related to external environment

are available in the market and contractors have the ability to obtain it. This factor appears in the top position due to the restrictions imposed at the Gaza Strip, which leads to high level of risk. This result illustrates that it is vital for contractors to investigate the market and collect data to understand the availability of materials in the market. This will support a contractor's decision to bid or not. Nirab (2007) reported this factor in second position with regard to the availability of resources within the region, with a RII of 0.647. These results are compatible with Skitmore *et al.* (1993), who showed that the decision to bid needs a comprehensive and intensive process of data collection and investigation of internal and external factors. They are also in line with the results of Eastham and Skitmore (1993), who showed the importance of material availability for the bidding decision. The results obtained for this factor in this study are higher than those obtained by Wanous *et al.* (2003), who reported this factor in ninth position with a RII of 0.663. The discrimination between the results obtained in this thesis and by Wanous *et al.* (2003) could be traced back to the different environmental conditions between the Gaza Strip and Syria.

"The stability of the construction industry" was ranked second by the aggregated respondents with a RII of 0.908. The clients and consultants ranked this factor third with a RII of 0.889 and 0.909, respectively, while the contractors ranked this factor first with a RII of 0.914. This illustrates the clear connection between this factor, the political

situation and the availability of raw material. The stability of the construction industry will reflect the stability of the projects, stability of raw material costs, the availability of raw materials and others. Another important indicator is the strong relationship between the construction industry and other industries such as commercial and information technology industries.

"The stable political situations" was ranked in third by the aggregated respondents with a RII of 0.902. The clients ranked this factor second with a RII of 0.911, the consultants ranked it fourth with a RII of 0.891, and the contractors ranked it third with a RII of 0.898. This factor appeared in very few references as they did not feel it important to match their studies. In this research, however, this factor appeared with high importance. Newcombe *et al.* (1990) emphasised the influence of the political environment, governmental law, economics and technology on the construction industry within which contractors operate. These results illustrate clearly that respondents are strongly satisfied that these factors play a critical role in the decisions and bidding strategies of contractors.

"The weak barriers to penetrate the market by new competitors", and "The local climate conditions" were ranked in the lowest two positions by the aggregated respondents with a low RII of 0.677 and 0.663, respectively. The results illustrate that the respondents are not satisfied that these factors could affect a contractor's decision to bid or not. These results were not completely matched with Wheelen and Hunger (1998).

## 5. Test of hypotheses and correlations

The Kolmogorove-Smirnov test was used to identify whether the data follow normal distribution. This test is deemed necessary prior to testing hypotheses as most parametric tests stipulate data have to be normally distributed. The test results shown in Table V clarify that the calculated $p$-value is greater than the significance level, which is equal 0.05 ($p$-value $> 0.05$). This in turn denotes that data follows normal distribution, and so parametric tests must be used.

*Hypothesies*

Respondents opinions regarding the factors affecting a bidder's participation in the construction tenders at significance level $\alpha = 0.05$:

*H0.* There are no differences in the opinions between clients, consultant and contractors regarding the factors affecting a bidder's participation in the construction tenders at significance level $\alpha = 0.05$.

To test the hypothesis a one-way ANOVA was used to test the difference between means of the opinions of the contractor, client and consultant with regards to the factors affecting a bidder's participation in construction tenders. Statistically, the *H0* is accepted; that is, there is no significant difference between respondents, with either the

**Table V.** One-sample Kolmogorove-Smirnov test

| No. | Factors affecting contractors bidding decision | Kolmogorove-Smirnov test | $p$-value |
|---|---|---|---|
| 1 | Factors related to the contractor | 0.795 | 0.553 |
| 2 | Factors related to the clients | 1.018 | 0.251 |
| 3 | Factors related to the contract and project characteristics | 0.591 | 0.876 |
| 4 | Factors related to the external environment | 0.501 | 0.963 |

$p$ value being $>0.05$ (significance level) or the $F$ coefficient of the ANOVA test being less than the critical $F$ value. As shown in Tables V and VI, the value of the $F$ test is less than the critical value for each field and whole fields. The $p$-value is also greater than 0.05 for each field and whole fields. The *H0* is, therefore, accepted, which means there is no difference in the opinions of contractors, clients and consultants regarding the factors affecting a bidder's decision to bid or not in the construction tenders at significance level $\alpha = 0.05$.

From Table VI it can be seen that the total $F$ value for all groups is 0.122, which is less than the tabulated $F$ value of 3.09. Therefore, the *H0* is accepted and this means that there are no differences in the opinions between the clients, consultants and contractors regarding the factors affecting a bidder's participation in the construction tenders.

## 6. Conclusions

A total of 78 factors affecting contractors' decisions to bid or not to bid were identified and classified into four groups. Based on the results, it was concluded that the financial capability of the contractor was the most important factor affecting the contractor's decision to bid or not. Moreover, the availability of equipment owned by the contractor, the contractor's competencies, experience in similar projects and the contractor's category in the PCU were ranked in the highest positions as critical factors affecting the contractor's decisions. The relationship between the contractor and subcontractors and the contractor's ability to make joint ventures were ranked in the lowest two positions by all respondents. These results reflect that the relationships between contractors and subcontractors need to be strengthened and supported.

The financial capabilities of the client, as well as their payment and compensation policies and their overall good reputation, are considered key factors affecting a contractor's decision to participate in tenders. Unexpectedly, adopting an e-tendering system in the bidding process was ranked in the lowest position by all respondents. It would be worthwhile, therefore, for decision makers in the construction industry in the Gaza Strip to include e-tendering, in the same way it is in developed countries. All respondents (i.e. clients, consultants and contractors) agreed on the most critical factors affecting a contractor's decision to bid or not in construction projects.

The financial values of the project, the due date of payments, the clarity of the contract clauses, the clarity of the drawings and especially the detailed drawings and the duration of the project were ranked in the five top positions by all respondents. The contract language (English or Arabic), the size of tender documents, tender fees and liquidated damages values were ranked in the lowest five positions by all parties as non-critical factors that have little influence on a bidder's behaviours in the bidding process. The availability of the required raw materials for the tender in local markets, the stability of the construction industry, the stability of the currency exchange rate, the stability of political situations and the stability of the currency exchange rate were ranked as the top five important factors affecting the contractor's strategies, arrangements and decision to participate in tenders or not. The weak barriers for new competitors to penetrate the market and the local climate conditions were ranked in the lowest two positions by all parties as factors having a weak influence on the bidder's decision to bid or not.

The one-way ANOVA test asserted that the clients, consultants and contractors have strong agreement regarding the factors affecting the bidders' participation

**Table VI.**
One-way ANOVA for the difference of the opinions at the four groups of factors

| Factors | Statistics | Sum of squares | df | Mean square | *F* | *p*-value |
|---|---|---|---|---|---|---|
| Factors related to the contractor and affecting his decision to bid or not | Between groups | 0.124 | 2 | 0.062 | 0.325 | 0.723 |
| | Within groups | 19.251 | 101 | 0.191 | | |
| | Total | 19.375 | 103 | | | |
| Factors related to the clients and affecting the contractor's decision to bid or not | Between groups | 0.250 | 2 | 0.125 | 0.627 | 0.536 |
| | Within groups | 20.096 | 101 | 0.199 | | |
| | Total | 20.345 | 103 | | | |
| Factors related to the contract and project characteristics and affecting the contractor's decision to bid or not | Between groups | 0.103 | 2 | 0.052 | 0.166 | 0.847 |
| | Within groups | 31.012 | 100 | 0.310 | | |
| | Total | 31.115 | 102 | | | |
| Factors related to the external environment and affecting the contractor's decision to bid or not | Between groups | 0.056 | 2 | 0.028 | 0.153 | 0.858 |
| | Within groups | 18.492 | 101 | 0.183 | | |
| | Total | 18.548 | 103 | | | |
| All factors | Between groups | 0.041 | 2 | 0.020 | 0.122 | 0.885 |
| | Within groups | 16.726 | 101 | 0.166 | | |
| | Total | 16.766 | 103 | | | |

**Note:** Critical value of *F* at df "2, 101" and significance level 0.05 equal 3.09

in construction tenders with a $p$ value of 0.153, which is greater than the significance of 0.05. From the results, it was concluded that there is no difference in the opinions between contractor, client and consultant regarding the factors affecting a bidder's participation in the construction tenders at significance level of 0.05.

## 7. Recommendations

It is recommended that the PCU draws comprehensive and precise criteria to review the classification that will be given for each contractor. These criteria should include: the financial capabilities of each contractor, the technical capabilities and previous experience of each contractor and the competencies and qualifications of each contractor's staff. The clients and consultants are recommended to consider the financial capabilities, technical capabilities and staff competencies of contractors during the awarding stage, and not to focus on the lowest bid only. These criteria will promote a contractor's chances of and willingness to bid comfortably, with high level of mutual respect and trust with the clients. The clients, consultants and PCU are recommended to connect and communicate regarding the feedback cycle for each classified contractor to obtain an updated status. This process could enhance the bidding environment and establish clear evaluation criteria for each contractor. These processes may require periodic review, as well as training for clients, consultants and PCU staff. The contractors are recommended to setup continuous development and training programs for their staff and provide them with supportive practical solutions for any problems encountered during the life cycle of works. This continuous improvement would necessitate an appropriate filing system that includes documentation for all previous projects and its challenges. These systems will strengthen a contractor's decision to participate and compete with a solid understanding. The banks in the Gaza Strip are recommended to play a supportive role in the development and enhancement of the bidding environment. This can be achieved through the provision of adequate bank facilities for the contractors, which will encourage them to participate in the tenders with fewer margins of pressure and risk.

It is recommended that clients adopt the advanced payment policy for contractors. This policy was a positive factor affecting a bidder's participation in construction tenders. The study recommends clients minimise the due date of payments to not more than 20 days from the submission of the payment request by the contractor. This recommendation is also expected to promote and enhance the bidders' decisions in the bidding process. It is recommended that clients and consultants prepare clear drawings and contract documents for contractors, to facilitate strong participation and in turn better benefits. In this context, also, and in order to strengthen a contractor's decision to bid, the clients and consultants are recommended to deliver the required raw material for each project (if applicable). This could strengthen the bidder's chances to bid by lowering the level of risks that have the potential to raise tender amounts and reduce the quality levels. Some clients (for example, NGO's and international clients) used this policy in some circumstances. This study provides an emergency appeal for the international community to look in profundity for the poor economic environments, unstable political situations and unstable construction industries. This situation has a harmful impact on both the contractors' bidding behaviours, and the health of the construction industry overall in Palestine.

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## Appendix

Groups of factors used in the questionnaire survey that affect respondents' decision to bid or not

| Factors related to the contractor that affects his/her decision to bid or not | Agreement level | | | | |
|---|---|---|---|---|---|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Financial capabilities of the contractor | | | | | |
| Number of previously executed projects by the contractor | | | | | |
| Experience in similar projects | | | | | |
| Contractor's category in PCU | | | | | |
| Previous relationship and communication level with the clients | | | | | |
| Experiences and competences of the contractor's staff | | | | | |
| Availability of equipments owned by contractors | | | | | |
| Administrative skills, technical skills and experience of the contractor's project manager | | | | | |
| Specific features that provide competitive advantages to the contractor, such as ability to make vertical integration | | | | | |
| Contractor's ability to make sustainable or temporary joint venture | | | | | |
| Bids in hand | | | | | |
| Risk taken and expected | | | | | |
| Contractor's competitive strategy | | | | | |
| Expected and planned profits for the project | | | | | |
| Importance of the project to the contractor | | | | | |
| Relationship between the contractor and the subcontractors | | | | | |
| Contractor's culture how, when and why to deal with the clients | | | | | |
| Relationship between the contractor and the banks (expected bank facilities) | | | | | |

**Table AI.**
Factors related to the contractor and affect his/her decision to bid or not

**Table AII.**
Factors related to the clients and affect the contractors' decision to bid or not

| Factors related to the client that affects the contractor's decision to bid or not | Agreement level | | | | |
|---|---|---|---|---|---|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Financial capabilities of the client | | | | | |
| Number of previous advertised projects by the client | | | | | |
| Reputation of the client | | | | | |
| Previous relationship and communication level with the contractor | | | | | |
| Experiences and competences of the client's staff | | | | | |
| The client's requirement from the contractors (financial, technical and administrative) | | | | | |
| The clients' level of supervision, restriction, monitoring and controlling over the contractors | | | | | |
| Quality level that the clients asks for | | | | | |
| Address of the client offices "where tenderers submit bids if it is not electronically tendered" | | | | | |
| Client's evaluation and awarding policy | | | | | |
| Criteria of contractors' selection | | | | | |
| Payment policy | | | | | |
| Currency paid by client (dollars, Shequle, Euro, JD or other) | | | | | |
| Number of annual advertised projects by the clients | | | | | |
| Types of annual advertised projects by the clients | | | | | |
| Type of the tendering system (open, restricted, pre-qualification or other systems) | | | | | |
| Targeted categories by the client | | | | | |
| Advertisement duration for the tender | | | | | |
| Way of advertisement (newspaper, post board, PCU web site, etc.) | | | | | |
| Adopting the e-tendering policy by the client | | | | | |
| Client's safety requirements | | | | | |
| Adopting FIDIC system in the contractual agreement | | | | | |
| Client's policy for compensation, and mainly under force majeure conditions | | | | | |
| Project source of funding | | | | | |
| Client's policy in resolving the disputes and litigations | | | | | |
| Client's policy to adopt the advanced payment for contractors | | | | | |

| Factors related to contract and project characteristics | Agreement level | | | | |
|---|---|---|---|---|---|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Financial value of the project | | | | | |
| Duration of the project | | | | | |
| Location of the project | | | | | |
| Complexity of the project | | | | | |
| Arabic language of the contract | | | | | |
| Values of insurances | | | | | |
| Bid bonds (tender security deposit) | | | | | |
| Fixed bid bond motivates the participation rather than being percentage bid bond | | | | | |
| Liquidated damages | | | | | |
| Tender fees | | | | | |
| Clarity of the contract clauses | | | | | |
| Presence of the VAT | | | | | |
| Type of contract" cost (lump sum, unit price) | | | | | |
| Type of project (construction building works, maintenance, repair works) | | | | | |
| Size of the tender documents (number of pages, drawing) | | | | | |
| Lotting system in the tender | | | | | |
| English language of the contract | | | | | |
| Clarity of the drawings, and specially, the detailed drawing | | | | | |
| Due date of the payments (after one month, two months or others) | | | | | |

**Table AIII.**
Factors related to the contract and project characteristics and affect the contractors' decision to bid or not

| Factors related to the external environment | Agreement level | | | | |
|---|---|---|---|---|---|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Number of competitors in the market | | | | | |
| Competences and capabilities of the competitors | | | | | |
| Weak barriers to penetrate the market by a new competitor, increase the bidders' probability to bid | | | | | |
| Awareness of the number of competitors in the tenders | | | | | |
| Awareness of the competitors' identity, who will participate in the tender will increases the probability to bid and compete strongly | | | | | |
| The stability of the economic climate | | | | | |
| The stability of the political situation strengthens the probability to bid | | | | | |
| Availability of the required raw material strengthens the probability to bid | | | | | |
| Stability of the construction industry | | | | | |
| Local climate (probability to participate in the tenders in the spring and seasons is higher than winter and autumn | | | | | |
| Stability of currency exchange rate | | | | | |
| Governmental regulations and statutes that are integrated in the construction industry | | | | | |
| The taxes and other financial requirements on each tender | | | | | |
| Availability (ampleness) of projects by the clients at the same time reduce the volume of participation in the tenders and increase the cost | | | | | |
| Classification criteria for the contractors by the PCU | | | | | |

**Table AIV.**
Factors related to the external environment and affect the contractors' decision to bid or not

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