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# Contractors Bidding Behaviors in Palestinian Construction Industry

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**Abstract**: The tendering procedures in the United Nation Relief and Work Agency (UNRWA) are based on a clear, transparence regulations and credible systems that focused directly to achieve the best value of money. The aim of this paper is to analyze the bidding process and the bidders' participation trends in the construction, maintenance and repair tenders in UNRWA during the period (2002-2007). 567contracts were awarded during that period for construction, maintenance and repair projects. The results show that the bidders have strong tendency to bid in the construction building tenders, while weak participation was observed in the repair tenders. The results show also that, the level of participation is improved with the existence of fixed bid bond rather than percentage bid bond. The clients are advised to adopt a cooperative strategy with the bidders to empower their tendency to participations in the repair works. Reducing tender fees for the repair tenders, reducing the bid bonds and a continuous consultative supports will enhance the bidding process at this type of work. The study provided some useful recommendation to enhance the bidding environment which can be benchmarked for any other clients.

**Keywords**: Contractors, bidding, behavior, strategy, UNRWA

# سلوك المقاولين في عملية تقديم العروض في صناعة الإنشاءات في فلسطين

**ملخص**: إن أنظمة العطاءات في وكالة غوث وتشغيل اللاجئين تعتمد على الوضوح والشفافية في اللوائح ووجود أنظمة دقيقة وموثوقة تركز بشكل مباشر على تحقيق أكبر قيمة للمال، تهدف هذه الورقة إلى تحليل عملية تقديم العطاءات واتجاهات وميول مشاركة المقاولين في مشاريع الإنشاء والصيانة والإصلاح في وكالة غوث وتشغيل اللاجئين في الفترة ما بين 2002-2007. حيث تم ترسية 657 عطاء للإنشاء والصيانة والإصلاح خلال تلك الفترة. وقد أوضحت النتائج أن المقاولين لديهم ميل قوي للمشاركة في عطاءات إنشاء المباني وعلى عكس ذلك بالنسبة للمشاركة في عطاءات الصيانة والإصلاح، كما دلت النتائج أن مستوى المشاركة يتحسن ويزداد باستخدام نظام الكفالات البنكية ذات القيمة الثابتة (المقطوعة) أكثر منه باستخدام النسبة المئوية. وينصح المالكون بإيجاد إستراتيجية للتعاون مع المقاولين لزيادة ميولهم للمشاركة في مناقصات أعمال الصيانة والإصلاح، كما أن تخفيض رسوم شراء العطاء لمشاريع الإصلاح، وتقليل قيمة الضمانات البنكية إلى جانب الاستمرار في تقديم الدعم الاستشاري يعزز المشاركة في هذا النوع من العطاءات. وقد قدمت الدراسة مجموعة من التوصيات المفيدة التي من شأنها تعزيز وتحسين البيئة التعاقدية والتي قد تكون حجر أساس للمؤسسات المالكة الأخرى.

**الكلمات المفتاحية**: المقاولين ، العطاءات ، السلوك، الاستراتيجية.

## Introduction

United Nations Relief and Works Agency (UNRWA) for Palestine Refugees in the Near East) is a relief and human development agency, providing education, healthcare, social services and emergency aid to over 4.5 million refugees living in the Gaza Strip, the West Bank, Jordan, Lebanon and the Syrian Arab Republic. UNRWA is by far the largest UN operation in the Middle East, with over 28,000 staff, almost all of them refugees themselves, working directly to benefit their communities as teachers, doctors, nurses or social workers [1]. Table 1 shows the registration profiles of the refugees in the Gaza Strip camps [2].

**Table 1: Registration profiles of the refugees in Gaza Strip camps**

| CAMP | Number of Registered Refugees in Camps |
|---|---|
| Jabalia | 106,846 |
| Rafah | 97,412 |
| Beach | 80,567 |
| Nusirate | 58,727 |
| Khan Younis | 61,539 |
| Bureij | 29,805 |
| Maghazi | 23,161 |
| Deir el-Balah | 20,215 |
| Total | **478,272** |

## Background

In UNRWA, there are mainly two departments that are processing the construction and infrastructure tenders, The Special Environmental Health Programme (SEHP) and the Engineering and Construction Services Department. The Special Environmental Health Programme (SEHP) was established to plan, design and construct water supply, sewerage and drainage works in refugee camps and surrounding areas as well as maintain basic environmental health services in the camps, such as refuse removal. The Engineering and Construction Services (ECSD) is in charge of the construction of UNRWA installations (schools, clinics, etc.). It organizes the tendering process and then supervises the contractors' work and building

progress. The department is also responsible for the maintenance of UNRWA installations [3].

ECSD is now, jointly with the SEHP, working on large-scale projects with an estimated total budget of US$ 70 million. The ECSD main responsibilities are:

- Preparing detailed profiles of the needy families and conducting an initial survey in the area where the houses will be constructed.
- Working closely with beneficiaries at the design stage to take into consideration, whenever possible, their needs.
- Preparing and implementing all site plans, architectural drawings, tender documentation and bills of quantities.
- Supervising the work in progress and inspect the completed projects for final approval [3].

The departments and programs that are compromising UNRWA field office can be shown in Figure 2. The figure shows that, there are six departments and six programs. One of these departments is the engineering and construction services department which will be considered in this study.


**Figure 2: Departments and programmes in the UNRWA Field office, Gaza (Source: [4])**

## Literature review

Previous studied [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16], showed that, the factors effecting bidders' participation in the construction tender can be categorized into four main groups. The first group related to the contractor characteristics, the second group related to the clients, the third group related to the contract and project characteristics while the fourth group related to the external factors such as (political situations, governmental regulations, …etc). Skitmore et al [7] showed that, the decision to bid need a comprehensive and intensive process of data collection and investigation of the internal and external factors. The internal factors related to the organizational capabilities and resources, while the external related to the market and project conditions. They summarize these factors in the following points, project related; organization related (internal); and market related (external).

Krasnokutskaya and Seim [16] stated that, the firms' decisions to participate in the tender depend on two different costs: a cost of entry and a cost of completing the project. Abdul-Hadi [5] categorized the factor affecting Bidding and Markup decisions in Saudi Arabia to five categories: project characteristics, project documents, company characteristics, the bidding situation and the economic situations. Eastham and Skitmore [9] proposed method by which the decisions may be made to participate in any project by considering the risks influences. Odusote and Fellows [6] 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 [13] described and developed a model to test a novel bid/no bid decision in the construction industry in Syria

Drew and Skitmore [8] classified the factors that influencing bidding behavior into three groups, the first group related to the behavior of contractors, ,the second group related to the individual contractor behavior, while the third group related to the contractor behavior toward the characteristics of the contract. Flanagan and Norman (1982) [cited in [18]] mentioned that bidding behavior, 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 [7] explained that, there are a variety of reasons why tenderers may prefer not to bid for a particular contract. These include bids in hands, the strength of the competition, low projected profit levels, cost of bidding and short period allowed for bid preparation. Drew and Skitmore [17] observed that the profitability of the project, bids in hands, the availability of contractor's staff and the technical capabilities of the contractor during the implementation of the works "construction methods" in addition to the ability of the architecting or designing are critical factors influencing the decision to participate in a new tender or not.

Stewart [11] emphasized that, much of the work on strategic management is based on the assumption that companies seek to earn profit or maximize returns to shareholders. Dijik [19] stated that, the bidders could be faced with the problem that making a bid involves costs; this means that, the estimation of the margin of profit may affect the bidding decision. Krasnokutskaya and Seim [16] stated that, the probability to submit a bid increases significantly with the firms capabilities. The large firms have strong trend to participate in the large size of the project. Sohail et al [10]

analyzed the factors effecting on the bidders participation, their survey revealed that 88% of the contractors' respondents believed that the technical competency, legal status of the contractors, experience with similar projects, competencies of the contractors' staff and managerial capabilities are an important factor for the contractor to participate strongly in the tenders.

The clients' policies and characteristics such as selection system, awarding criteria, advertisement characteristics, tendering system, reputation of clients and others are critical factors affecting the contractors bid no bid decisions. Drew and Skitmore [7] emphasized that the character of construction markets is set by several factors one of these factors is the nature of the client and the type of competition experienced by the construction firm. Drew et al. [12] concluded also that, three important factors influencing contractor-bidding behavior, these factors are the type of client, type of construction work and the size of construction work. Krasnokutskaya and Seim [16] illustrated the influence of the tenders' advertisement procedures for the benefit of clients and contractors. Bluestein [20] explained that, news paper advertised could be done electronically for wider publishing. The client policy of inviting the categories, client reputation, transparency, credibility, client experience and many other factors were studied by several researchers [17, 21, 22, 23, 24, 25, 26, 27].

Several factors related to the contract and project characteristics affecting the contractors' decision to bid or not. Drew and Skitmore [8,17] concluded that, the contract conditions, site conditions, construction methods and programme, market conditions and identity of other participated bidders are critical factors influencing the decision to participate or not. Krasnokutskaya and Seim [16] identified a number of factors that have an impact on the bidding behaviors such as: working days, number of bidders participated in the tender, distance to project, current load and qualified small business. Noumba and Dinghem [14] revealed that, the efforts, resources and time spent to review and fill the bids will influence the bidders' strategy to contribute in future with similar projects or not. Krasnokutskaya and Seim [16] showed that, the contract requirements have an influence on the bidding behaviors, and they found that, the low bidders' categories prefer the small size projects and 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 [28] draw a connection between contract size and

the size of contractors. They state that only the largest firm normally undertakes the largest contracts, while both small and large firms undertake the small contracts. Eastham and Skitmore [9] emphasized that, the project and contract characteristics are critical factors that affecting the bidders' decision of participation.

The contractors' bidding decision affected also by the external environmental conditions such as number of competitors in the market, the strength of the competitors, stability of the construction industry, governmental regulations, weather conditions, and others. Newcombe et al [29] showed that, the construction environmental industry where contractors operate is consisting of general environmental factors such as politics and law, economics, sociology and technology as well as competitive environmental factors such as finance, plant, labour, management, suppliers, subcontractors, consultants and clients. Hong and shun [30] stated that, an increase in the number of bidders has two counteracting effects on equilibrium bidding behaviors. First, the increased competition generally leads to more aggressive bidding, as each bidder tries to maintain her chances of wining against more rivals: this action called competitive effect. Second, the winner curse become more severe as the number of bidders increases and rational bidders will bid less aggressively in response: this action called winners course effect. If the winners curse effect is large enough, the possibility arises that prices could actually rise as the number of market increases. Hong and shun [30] found that, the costs of procurement auctions increased by 30% as the number of bidders increase from 3 to 6 bidders. Athey et al [31], observed that the competition with unknown bidders (sealed envelops) attract more bidders than the open auctions with generating higher revenue.

**Methodology**

This analytical study aims to evaluate and investigate the contractors' participation process in the UNRWA's tenders, and mainly the tenders that are processed throughout the ECSD. The analyzed data during the period from (2002-2007) includes the five registered categories ($1^{st}$, $2^{nd}$, 3rd, $4^{th}$, and $5^{th}$) in the Palestinian Contractors Union (PCU) and the three UNRWA's categories (A, B and C). The three UNRWA's categories were classified based on the technical, financial and managerial capabilities of the Gaza Strip contractors. In addition, the UNRWA classification was valid for UNRWA's project only and not valid for other institutions project. "A" UNRWA category was authorized to bid in the large size projects with UNRWA (over one million dollars such as: schools, health centers, Relief buildings, Re-housing), "B" UNRWA category was authorized to bid in

medium size projects (half million dollar to one million dollars such as: classrooms, shelters, maintenance projects), while the "C" UNRWA category was authorized to bid in small size projects (less than half million dollar such as: construction shelters, maintenance, repair projects).

The varieties of the volume of participation from time to time and from project to other are affected by several factors. To investigate these factors, the historical data for UNRWA's project during this period was considered and analyzed. It is hoped that, the outcome of this study will enhance and improve the tendering environment within this institution as well as other parties within the Palestine construction industry. The available database "Access software" was organized by the project evaluation engineer to facilitate the daily activities in the tendering process. The data base includes comprehensive information about each project such as project name, tender number, tender amount; location of project, number of bidders collected the bids, number of bidders submitted the bids and other useful and relevant data. Figure 3, shows the interface page of the supportive data base. This software database facilitates and provides the tendering unit with the reports, queries Tables, forms and any other needed data for the analysis and comparison purposes.

There are three types of tenders that the ECSD deals with. The first type of tenders is the building tenders that include schools and schools facilities like (canteens, toilets), health centers, relief building, re-housing projects, shelters buildings (for the special hardship cases in the camps). The second type of tenders is the maintenance tenders that include maintenance works for the UNRWA's installations and facilities only like schools, health centers, etc. The maintenance tenders are advertised and processed over all seasons when necessary. Moreover, there is a periodical maintenance occurred annually in summer season. Such maintenance works includes carpentry, metal, concrete, finishing, sanitary and other maintenance works. The third type of tenders is the repair tenders. These tenders are advertised and implemented for the Palestinian refugees' families whom houses and properties were partially damaged due to the Israeli invasions and attacks. Moreover, the repair works can be carried out for the special hard ship case (SHC's) shelters that suffer bad living conditions. Several donors are contributing generously throughout UNRWA to help the families that suffer bad conditions.

Based on the UNRWA's decision in the end of 2006 to suspend their short lists and to consider the PCU lists, the contractors who were not registered in the PCU were asked to register immediately to be eligible to participate in the UNRWA's tenders. The available database shows that, some of the

participated contractors in the UNRWA's tenders were not classified in the PCU lists. For the consistent and reliable grounds of this study, the contractors' categories that were classified in the UNRWA's lists only were converted to the equivalent categories of the PCU based on the financial ceiling. (A, B and C) were transformed to the equivalent category of PCU lists. A was considered as 1st and 2nd PCU, B was considered as 3rd PCU while C was considered as 4th and 5th category. Such transformation will meet mainly the financial ceilings of each category.

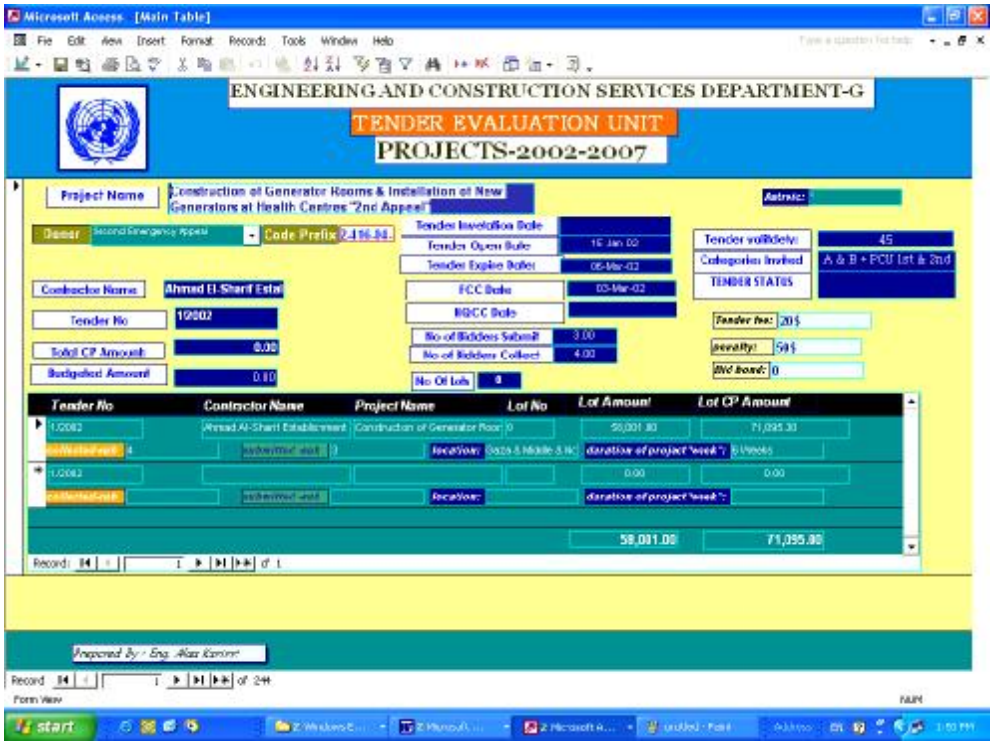


**Figure 3: Interface of the supportive database**

This study is applied to the projects within a period of 2002-2007, and accordingly, the obtained results may be affected by the political situations such as the closure impacts at Abu Holi junction that separated Gaza and north area from the northern direction and Rafah and Kh-Younis from the southern direction. The influence of the risk taking to participate in the tenders may affect on the participation process. To reduce the influence of the closure at participation process, during that period, UNRWA arranged to receive the bids in its maintenance offices at the south area instead of submitting it in the Gaza field office.

**Results and discussion**

The available database (from 2002-2007) shows that, one hundred and eight (108) contractors were awarded 567 contracts with a total budget of $104,028,738.00. These contracts were not awarded to all these contractors equally. 6265 contractors have collected the bids, 3459 of them were interested and submitted the tender documents (responded) and return it back to UNRWA office. These figures represented 55 % response rate of the total collected tenders. The obtained figures reflect clearly that there are some factors affecting the bidders' behaviors and decisions to participate or not.

**The distribution of the awarded contracts**

As illustrated in Table 2, the construction contracts represent 47.4% of the total awarded contract. The maintenance contracts were the second highest number of contracts that were awarded during this period of study that represented 42.3% of the total contracts. The repair contacts represent 10.3% of the total volume of the contracts with the lowest volume of contracts.

**Table 2: Contracts distribution over the period of (2002-2007)**

| Type of contract | No of contracts | % of total contract |
|---|---|---|
| Construction | 269 | %47.4 |
| Maintenance | 240 | %42.3 |
| Repair | 58 | %10.33 |

**Factors affecting bidders' participation in the construction tenders**

Based on the previous literature review, the factors that affecting the bidders' strategies to participate can be classified into four groups. The first group related to the contractor (technical capabilities, financial capabilities, ability to make joint venture, vertical integration strategy, and other factors). The second group related to the clients behaviors and polices that affect the contractors' decision to participate. The third group related to the contract and project characteristics such as (language, conditions, clauses, duration, location, and other factors). While the fourth group related to the external factors such as (environmental factors, competitors, weather conditions, political situations, economical growth, governmental regulations, bargaining power of supplier, etc). In this analytical study, the main factors that are related to the contract, project, contractor and clients characteristics will be investigated, such as (contract amount, project location, project complexity, tender fees, bid bonds, duration of project, type of project,

location of project, weather conditions, liquidated damages and contractors' categories).

**Influence of tender amount on bidders' participation process**

To investigate the impact of the tender amount on the participation process, the historical data of the UNRWA's projects were classified and categorized based on its value. The first group includes the tenders that are less than US$ 30,000.0; the second group includes the tenders that are ranged between (US$30,000.0-100,000.0), while the third group includes the tenders that is over than US$ 100,000.0. This approach of grouping is related to the awarding committees as the first group is under the department authority, the second group is under the UNRWA's field contracts committee ( FCC), while the third group is under the headquarter contracts committee ( HQCC).

The results in Table 3 shows that, for the tenders that are less than $30,000.0 the average number of contractors that collect the tender documents were (13) bidders per contract, while the average bidders who submitted the tenders were 7.3 bidders per contract and being (56.1%) of the total collected bids. The response rates as depicted in Table 3 shows also that, the three groups are close to each others; this reflects a small influence of the tender amount in the participation process.

Table 3**:** Impact of tender amount on the participation process

| **Groups of tenders** | **Number of collected bids** ( from 2002-2007) | **Number of submitted bids** ( from 2002-2007) | **Average collect per contract** | **Average submit per contract** | **(%) Response rate** |
|---|---|---|---|---|---|
| Less than $ 30,000.00 | 3,008.0 | 1,726.0 | 13.00 | 7.3 | 56.1% |
| $30,000.00 – 100,000.00 | 1,599.0 | 827 | 12.3 | 6.4 | 52.03% |
| Over $100,000.00 | 1,658.0 | 906 | 12.3 | 6.7 | 54.47% |

From Table 3, it can be observed that the ranges of the response rate for the three groups are within (52-56%), which reflects a minimal influence of the tender amount on the participation process in spite of the low rate of responding. This can be shown as the deviation among each group is within the range of the other which means that the influence of the tender amount on the level of participation is not clear.

**Influence of project's duration on bidders' participation process**

To study the impact of the project duration on participation process, the type of work (construction, maintenance, and Repair work) was integrated in this analysis. The projects during the period (2002-2007) was categorized based on the project's duration into three groups, the first group includes the projects that have durations more than six months, the second group includes the projects that have durations from three to six months, while the third group includes the projects that have durations less than three months. Table 4 shows the level of participation and the responds rates for each group with the influence of each type of work.

**Table 4: Influence of project's duration on the participation process**

| Type of work | Average collected per contract | | | Average submitted per contract | | | response rate% ( Collect/submit) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Project duration ( Month) | | | | | | | | |
| | More than **6** | From **3- 6** | Less than **3** | More than **6** | From **3- 6** | Less than **3** | More than **6** | From **3- 6** | Less than **3** |
| Construction | 11.8 | 12.1 | 10.8 | 8.4 | 6.3 | 7.00 | 71.2% | 52.0% | 64.8% |
| Maintenance | 12.00 | 15.00 | 14.00 | 8.5 | 11.00 | 7.3 | 70.8% | 73.3% | 52.1% |
| Repair | -- | 3.3 | 13.6 | -- | 2.7 | 5.00 | 0.00 | 81.8% | 38.5% |

From Table 4 it can be observed that, the project's duration has a clear influence on the level of participation. The construction and maintenance tenders that have project duration over six (6) months show a high and close response rate of 71.2% and 70.8% with average number of (8.5) responded bidders. This result reflects strongly that the duration of the project is an important factor to increase the volume of participation and to enhance the level of competitiveness. The volume of participation at the maintenance tenders that have projects' duration from (3-6) months was relatively high with a response rate of 73.3% and with an average number of (11.0) responded bidders. These results emphasize also the positive impact of the project's duration on the bidders' participation behaviors.

The response rate in the repair's tenders may mislead the reader from the first time. The projects that have duration between three to six months (3-6) have a response rate of 81.8%, although a high response rate, this percentage did not reflect strong participation. The average bidders that submitted these tenders are 2.7 bidders out of 3.3 collected. The same results were observed at the repair works that have project's duration less than 3 months with a response rate of 38.5% and average number of (5.0) responded bidders. The reasons for the weak participation in the repair

tenders may return to the vagueness and uncontrollable accurate measurement for the quantities that are subjected to the judgment of the survey teams. Moreover, the complexity and number of elements that are considered in the survey works will increase the risks. The repair works in general needs a huge managerial capabilities rather than financial capabilities due to its fragmental characteristics. The contingencies in the majority of the repair projects were taken by UNRWA greater than other types of projects (10% of the tender amount) due to the uncertainty of estimated works. These characteristics of repair works may justify the poor participation in these types of tenders.

For the projects that have a duration less than three (3) months it was shown that, the participation in the construction tenders is the highest among other types with a response rate of 64.8% and with an average of seven (7.0) bidders per contract, while the response rate in the maintenance and repair works was 52.1% and 38.5% respectively with an average number of bidders per the contract of (7.3) and (5) bidders respectively. From Table 4, it is concluded that, the contractors have a strong trend to participate in the construction tender that have duration more than six months, and have a strong trend also to participate in the maintenance tenders that have a moderate duration (from three to six months), while the trend of participation in the repair projects that have duration less than three months appeared to be higher than the repair projects that have duration from three to six months.

The overall results indicate that, participation process is clearly influenced by the duration of the projects. In general, the results demonstrate a close trend of bidders' participation towards the construction and maintenance with a margin of variety among each of these two groups. The weak participation trends that appeared in the repair works could be enhanced and promoted by the clients. Providing some facilities for the contractors and setting up higher level of mutual cooperation between the contractors and clients' engineers will overcome the daily problems and to realize part of the pressures form the contractor side. Additionally, some motivational tools financially form the client such as reducing the required bid bonds and tender fees for the repair tenders may be also useful to be conducted.

**Influence of project location on the participation process**

To study the influence of project location (geographical impact) on bidders' participation process, the projects in the south area, middle area and Gaza and North area were categorized. The type of work (construction, maintenance, and Repair work) was integrated in this analysis to investigate

the level of participation in each region. The level of participation and the response rates for each geographical region with the influence of each type of work is shown in Tables 5 and 6.

**Table 5: Influence of the project's location at the participation process**

| Type of Contract | Area-Region ( collected- submitted ) per contract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | South Area | | Resp. Rate % | Middle Area | | Resp. Rate % | Gaza and North Area | | Resp. Rate % |
| | Average Collect t | Average Submit | | Average Collect | Average Submit | | Average Collect | Average Submit | |
| Construction | 10.7 | 5.7 | 53.4% | 11.6 | 8.2 | 70.3 % | 9.0 | 6.6 | 72.8 % |
| Maintenance | 14.1 | 8.4 | 59.4% | 14.3 | 5.9 | 41.3 % | 10.5 | 5.9 | 56.5 % |
| Repair | 14.3 | 6.2 | 43.2% | 14.4 | 3.5 | 24.5 % | 10.2 | 3.5 | 34.2 % |
| **Total** | **13.0** | **6.8** | 51.9 % | **13.4** | **5.9** | 43.6 % | **9.9** | **5.3** | 53.8 % |

**Table 6: Influence of the project's location at the participation process overall areas**

| Type of Contract | Total - average (collect-submit) overall regions | | |
|---|---|---|---|
| | Collect per contract | Submit per contract | Resp. Rate % |
| Construction ( south, middle and North area) | 10.4 | 6.8 | 65.3 % |
| Maintenance ( south, middle and North area) | 13.0 | 6.7 | 52.0 % |
| Repair ( south, middle and North area) | 13.0 | 4.4 | 33.9 % |
| **Total** | **12.1** | **6.0** | **49.4%** |

From Table 5 it can be observed that, in south area, the maintenance tenders were the highest volume of participation and response rate with an average of 8.4 bidders submitted the bids out of 14.1 who collected the bids (59.4% response rate). The highest volume of participation and response rate in the middle area was observed in the construction tenders with an average of 6.6 submitted bids out of 9.0 collected bids (70.3 % response rate). In addition, at the Gaza and North area, the volumes of participation at the construction tenders were the highest also among the maintenance and repairs tenders.

This figurer shows a response rate of 72.8% and with an average of 6.6 bidders submitted the bids out of 9.0 bidders collected it.
From Table 5, it can be concluded also that, the average participation in both south and Gaza and North areas is very close (around 53%), while the participation in the middle area are lower than the other areas (43.6%). The average submitted bids per each contract overall areas are ranged from (4.4 to 6.8) bids per contract. The response rate over all locations as shown in Table 6 reflects that the participation in the construction tenders overall regions was the highest with a response rate of 65.3%. The participation in the repair tenders were the lowest also overall areas. A weak participation was shown clearly in middle are and especially in the repair works.
The reasons may be returned to the following reasons:

- The fragmental characteristic of the repair works needs familiar bidders with these projects and understanding of all circumstances and environments surrounding the project.
- The repair works needs a full awareness about the installations and houses locations, such cases desire familiar contractors who may locate originally at these areas.

In General, the geographical locations do not have a strong influence at the bidders' participation. The type of project has a greater impact than the geographical location.
Out of all discussions, some major points can be concluded;

- The volume of participation (submitted bids) was the highest level at the middle and (north and Gaza) area at the construction works and at the south area at the maintenance works, while the best response rate was at the (north and Gaza) area at the construction works.
- The three geographical locations show a weak volume of participation and response rate mainly at the repair works.

**Table 7: Influence of seasons on bidders' participation process**

| Type of Contract | Seasons' Influence | | | | | | | | | | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Winter | | | Spring | | | Summer | | | Outmen | | | | | |
| | Average Collect per bid | Average Submit per bid | Resp. Rate | Average Collect per bid | Average Submit per bid | Resp. Rate | Average Collect per bid | Average Submit per bid | Resp. Rate | Average Collect per bid | Average Submit per bid | Resp. Rate | Total Average Collect | Total Average Submit | Resp. Rate |
| Construction | 8.7 | 6.1 | **70.1%** | 12.8 | 6.8 | **53.1%** | 8.2 | 4.5 | **54.9%** | 9.6 | 7.4 | **77.1%** | 9.8 | 6.2 | 63.1% |
| Maintenance | 10.3 | 6.0 | **58.3%** | 13.4 | 6.4 | **47.8%** | 10.1 | 6.8 | **67.3%** | 11.5 | 6.7 | **58.3%** | 11.3 | 6.5 | 57.2% |
| Repair | 14.0 | 10.0 | **71.4%** | 10.1 | 4.1 | **40.6%** | 8.7 | 5.8 | **66.7%** | 14.6 | 4.5 | **30.8%** | 11.9 | 6.1 | 51.5% |
| **Total** | 11.0 | 7.4 | **67.0%** | 12.1 | 5.8 | **47.7%** | 9.0 | 5.7 | **63.3%** | 11.9 | 6.2 | **52.1%** | 11.0 | 6.3 | **56.9%** |

**Influence of the seasons (weather conditions) on the bidders' participation process**

In Table 7, the influence of winter, spring, summer, and outmen seasons on bidders' behaviors is examined. The results revealed that, the volume of participation in the summer and winter seasons are the highest among the other seasons. This result indicate that, the numbers of projects that are usually declared to the local contractors in these two seasons are less than the number of projects in other seasons. In average, 20% of the projects were advertised in these two seasons, while in the spring and outmen the percentage is higher than these two seasons.

The bidders who have previous experiences with UNRWA systems will be aware about the volume of projects that are declared during the four seasons. The awareness of the contractors about UNRWA's system will influence their decisions for participation. This will justify the reasons why the contractors participate stronger in summer and winter seasons. The bidders try to maintain and keep their staff engaged within their projects, besides; they try to increase their chances to win any more bid.

Table 8 shows that, the number of projects in outmen and spring represented higher than 60% of the total annual projects, this explains why the volume of participation in both seasons is lower than summer and winter. The chances to win the bids in outmen and spring could be higher respect to the larger number of projects. Figure 4 and Figure 5 shows the level of participation in each season and its influence at the response rate.

**Table 8: Influence of number of projects per season on the level of participation**

| Season Impact | # of projects/season | % of projects |
|---|---|---|
| Summer | 107 | **18.87%** |
| winter | 113 | **19.93%** |
| outmen | 140 | **24.69%** |
| spring | 207 | **36.51%** |
| **Total** | **567** | **100.00%** |

From figure 4, it is observed that, the response rate in both summer and winter is higher than the response rate in spring and outmen. The reasons as explained before returned to the number of projects per seasons. Figure 5

shows the level of participation in each season and the average collected and submitted bids per contract in each season.

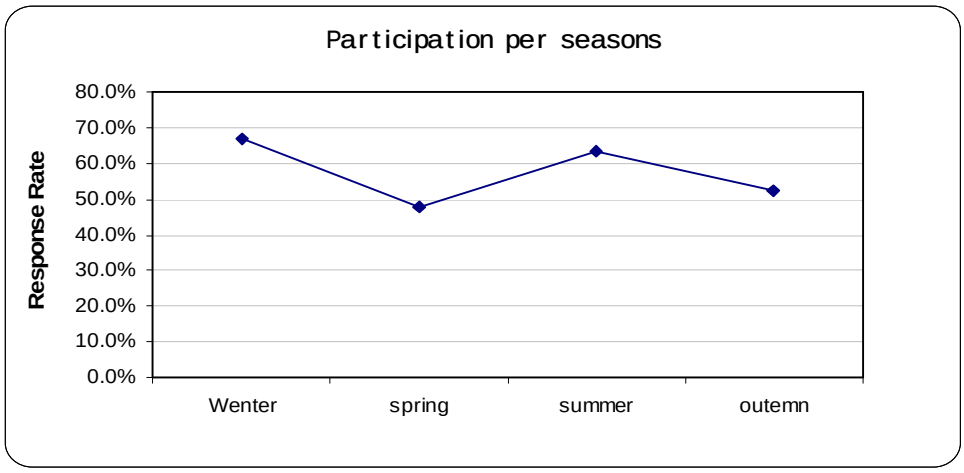


**Figure 4: Influence of seasons at the participation process**

From Figure 4, it is observed that, the response rate in both summer and winter is higher than the response rate in spring and outmen. The reason behind that could be traced to the number of projects per seasons. Figure 5 shows the level of participation in each season and the average collected and submitted bids per contract in each season.

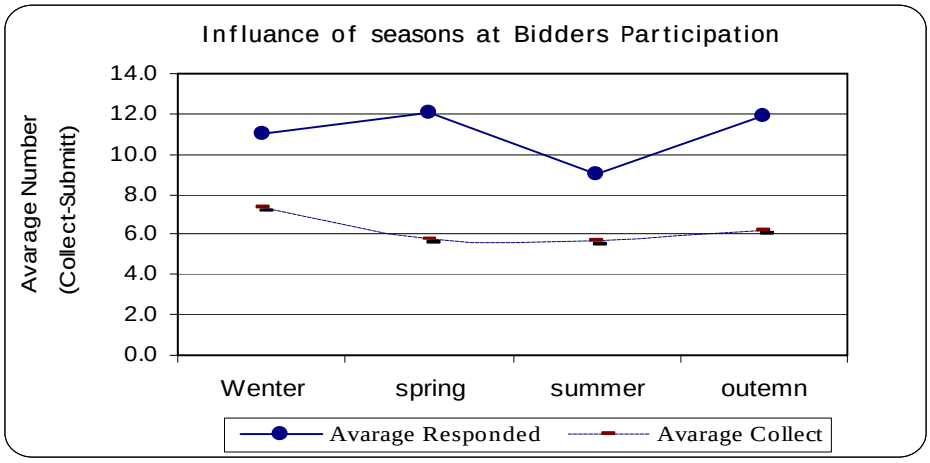


**Figure 5: Influence of seasons at the participation process (collect – submit) per contract**

## Contractors Bidding Behaviors in Palestinian

### Influence of the bid bonds at the bidders' participation process

In this section, the influence of bid bond on participation process in each type of work (construction, maintenance and repair) will be discussed. The results in Table 9 show that, four different types of the bid bonds were used in UNRWA's tenders. Tenders with zero bid bonds but there is retention for each payment (10% retention). These tenders with a zero bids bonds are specially adopted with a type of contracts that called (standard form of UNRWA's contract with retention). This type of contracts are not requesting bid bonds from contractors as a guarantee not to withdraw from the tender, but alternatively there is a retention from each payment with a value of (10%). The reason not to request bid bonds is to encourage more bidders specially, low categories to bid which matching UNRWA policy. The second type of a tender that includes the bid bonds are the tenders with 2.5% bid bond of the total tender amount. The third type of tenders include 5% bid bonds of the total tender amount while the fourth type includes fixed bid bonds which is requested under special cases.

From the results shown in Table 9, it can be inferred that, as the bid bond decrease the response rate increase. In addition, as the bid bonds being a certain figure, the trend of participation and the response rate become higher. This can be traced to the confidentiality of the tender amount for each bidder. The percentage of bid bond may be an easy method for the some bidders who have unethical relations with the banks' staff to conclude the tender amount for other competitors which destroy the fair competitiveness.

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**Table 9: Influence of the bid bonds' types at the bidders' participation process**

| Type of Contract | Bid Bonds influence | | | | | | | | | | | | Average Collect | Average submit | Resp. Rate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Zero Bid Bond | | | 2.5% Bid Bond | | | 5.0% Bid Bond | | | Fixed B.B | | | | | |
| | Average Collect per bid | Average Submit per bid | Resp. Rate | Average Collect per bid | Average Submit per bid | Resp. Rate | Average Collect per bid | Average Submit per bid | Resp. Rate | Average Collect per bid | Average Submit per bid | Resp. Rate | | | |
| Construction | 9.4 | 6.3 | **67.02%** | 13 | 7 | **53.85%** | 9.6 | 5.6 | **58.33%** | 13.5 | 11.36 | **84.15%** | 11.375 | 7.565 | **66.51%** |
| Maintenance | 12.5 | 6.2 | **49.60%** | -- | -- | **0.00%** | 11.7 | 6.8 | **58.12%** | -- | -- | **0.00%** | 6.05 | 3.25 | **53.72%** |
| Repair | 5.7 | 5.3 | **92.98%** | -- | -- | **0.00%** | 12.7 | 4.7 | **37.01%** | -- | -- | **0.00%** | 4.6 | 2.5 | **54.35%** |
| **Total** | **9.20** | **5.93** | **64.49%** | **13.00** | **7.00** | **53.85%** | **11.33** | **5.70** | **50.29%** | **13.50** | **11.36** | **84.15%** | **7.34** | **4.44** | **60.45%** |

**Influence of liquidated damages/day on the bidders participation**

Table 10 shows the influence of the liquidated damage' values at the bidders' participation behavior. Samuels (1996) defined the liquidated damages as "an amount of money agreed upon by both parties to a contract which one will pay to the other upon breaching (breaking or backing out of) the agreement or if a lawsuit arises due to the breach". This amount of money is determined before the occurrence of the breach. Sometimes the liquidated damages are the amount of a deposit or a down payment, or are based on a fixed percent (such as 10% of the contract amount).

As illustrated in Table 10, the highest range of responding and participation was in the construction tenders that have liquidated damage of ($300-$500) per day. These contracts had special characteristics that required restricted duration during the implementation stage. The contracts that have liquidated damages ($300-$500) per day consist of (13 re-housing contract, 22 school and 3 health centers). Applying sort of pressure on contractors aimed to minimize the expected delay as possible to complete the projects within the planned period. The majority of contractors understand that the high liquidated damages reflect high importance of project. The majority of the bidders prefer these projects in spite of its high liquidated damages values. Moreover, the range of risk may be less than other projects such as maintenance and repair works. These results could not be generalized for all projects. The majority of the projects (about 400 contracts) have $50 liquidated damages per day.

**Table 10: Influence of the liquidated damages at participation process**

| Type of Contract | 50$ penalty/day | | | 100-200 $ penalty/day | | | 300-500$ penalty/day | | |
|---|---|---|---|---|---|---|---|---|---|
| | Average Collect per bid | Average Submit per bid | **Resp. Rate** | Average Collect per bid | Average Submit per bid | **Resp. Rate** | Average Collect per bid | Average Submit per bid | **Resp. Rate** |
| Construction | 8.3 | 5.5 | **66.27%** | 11.05 | 5.85 | **52.94%** | 11.65 | 8.48 | **72.75%** |
| Maintenance | 12.2 | 6.4 | **52.46%** | 0 | 0 | **0.00%** | 0 | 0 | **0.00%** |
| Repair | 10.8 | 4.9 | **45.37%** | 13.1 | 4.6 | **35.11%** | 0 | 0 | **0.00%** |
| **Total** | **10.43** | **5.60** | **53.67%** | **12.08** | **5.23** | **43.27%** | **11.65** | **8.48** | **72.75%** |

**Contractors Bidding Behaviors in Palestinian**

Figure 6 shows that, the influence of the liquidated damages at the bidders' participation in each type of work. From figure 6, it can be observed that, the construction projects had three types of liquidated damages; the repair works had two types of liquidated damages while maintenance works had only one type of liquidated damages with a value of $50.0 per day. These differences of the liquidated damages returned to three main reasons; the type of UNRWA's contracts, the values of the project and the importance and special characteristics of the project itself.

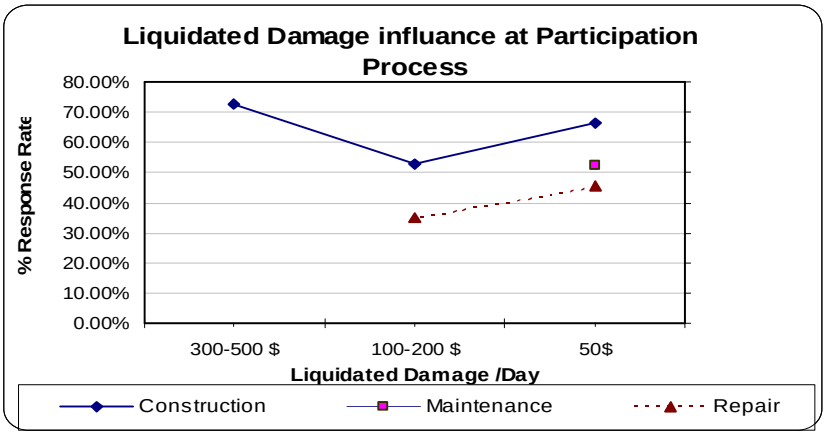


**Figure 6: Influence of liquidated damages value at participation process**

**Influence of tender fees at the bidders participation process**

Table 11 shows that, the highest response rate was shown at the tender fees with a value of $10 representing 79.13% response rate, while the lowest response rate was shown at the tender fees with a value of $100.0 representing 44.98% response rate. Although low response rate for the contracts that have one hundred dollars' tender fees, the average submitted bids are reasonable respect to other types.

**Table 11: Influence of the tender fees at participation process**

| Tender Fees $ | 0 | 10 | 20 | 50 | 100 |
|---|---|---|---|---|---|
| Average number of bidders collected per contract | 10.10 | 8.47 | 11.53 | 5.80 | 14.45 |
| Average number of bidders submitted per contract | 6.17 | 6.70 | 5.87 | 3.90 | 6.50 |
| Response Rate | **61.06%** | **79.13%** | **50.87%** | **67.24%** | **44.98%** |

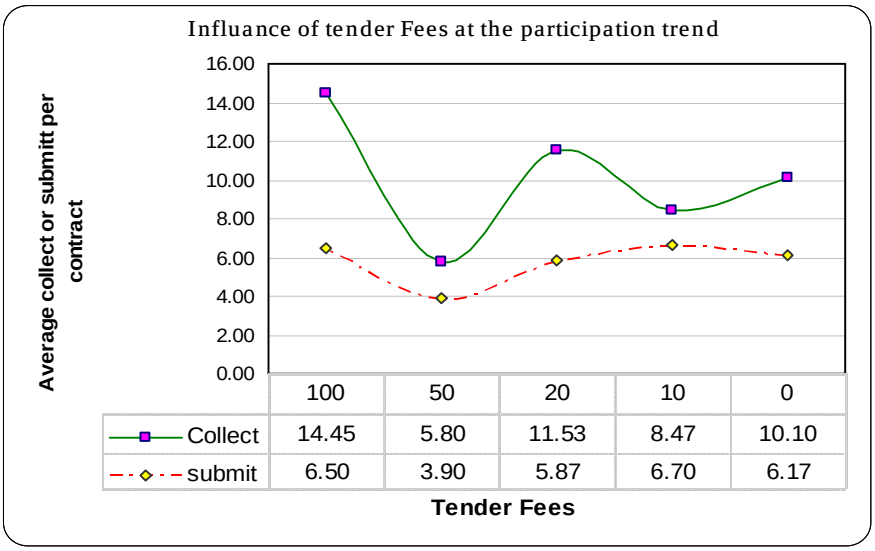


**Figure 7: Influence of the tender fees at participation process**

From Figure 7 it can be observed that, there is no consistent relationship between the tender fees and the number of respondents and the response rate. This was shown as the tender fee value is $ zero, the number of respondents were 6.17, while the number of respondents were 6.5 when the tender fee was $100.0. Moreover, it is noticed that high fluctuation between the response rate and the number of respondents in the tender fees of $10, $20 and $ 50 as shown in Figure 7. From these results it can be concluded that, there is a weak influence of the tender fees at the contractors' decisions to participate in the tenders.

**Contractors Bidding Behaviors in Palestinian**

**The influence of the invited category on the number of the awarded contract**

Table 12 shows that, 125 contracts were awarded when UNRWA invited 1st, 2nd, 3rd, 4th, and 5th building categories in 13 times during the period from 2002-2007. 346contracts were awarded when UNRWA invited 1st, 2nd, 3rd, and 4th building categories. 51 contracts were awarded when UNRWA invited 1st, 2nd and 3rd building categories. 6 contracts were awarded when UNRWA invited 1st and 2nd building categories contracts while 39 contracts were awarded when UNRWA invited only 1st building categories. It can be observed from Table 12 that there is a consistency of the chance between all categories to win the bids.

The results shown in Table 12 and in Figures 8, 9, 10, 11 and 12 illustrated that, the best chances for each category to win the bids were in case of inviting 1st, 2nd, 3rd, and 4th categories. The results indicated also that, the 1st category was awarded 55 contracts out of 122 contracts when the four categories were invited. The 2nd category was also awarded 150 contracts out of 218 contracts when the four categories were invited also. Moreover, the 3rd category was awarded 122 contracts out of 168 contracts when the four categories were invited also. These results show that, the best opportunities for each category are to compete with the present of three additional categories. Such process will promote the internal commitments for all bidders to improve their competitiveness strategies to bid with a high level of concentration, precession and with minimum floats. The overall benefits will strength the continuous improvement in the bidding system.

The results in Table 12 illustrates that, the 2nd category has the strongest chances category to win the bids (218 out of 567). This result reflects the managerial and technical capabilities for such category to make a balance between and among overall competitors in the market. The 3rd category is also has a strong competitive trends, this is observed throughout the ability of this category to win (168 out of 567) contract.

**Table 12: The invited categories and the awarded contracts per each category**

| Category Invited | No. of invitations | No. of Awarded Contracts per category | | | | | Total awarded Contracts |
|---|---|---|---|---|---|---|---|
| | | 1st | 2nd | 3rd | 4th | 5th | |
| **1st,2nd, 3rd, 4th, 5th** | 13 | 8 | 40 | 37 | 36 | 4 | **125** |
| **%** | | 6.40% | 32.00% | 29.60% | 28.80% | 3.20% | |
| **1st,2nd, 3rd, 4th** | 20 | 55 | 150 | 122 | 19 | 0 | **346** |
| **%** | | 15.90% | 43.35% | 35.26% | 5.49% | 0.00% | |
| **1st,2nd, 3rd** | 12 | 20 | 22 | 9 | 0 | 0 | **51** |
| **%** | | 39.22% | 43.14% | 17.65% | 0.00% | 0.00% | |
| **1st,2nd** | 3 | 0 | 6 | 0 | 0 | 0 | **6** |
| **%** | | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | |
| **1st** | 17 | 39 | 0 | 0 | 0 | 0 | **39** |
| **%** | | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| **Total** | **65** | **122** | **218** | **168** | **55** | **4** | **567** |

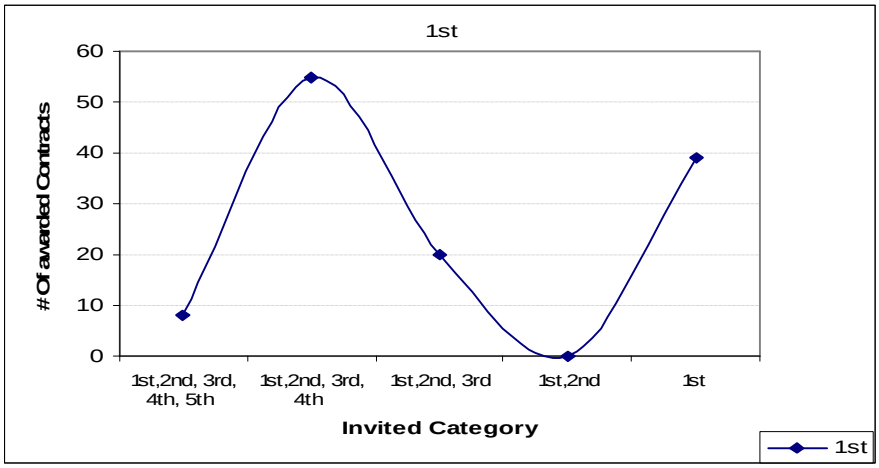


**Figure 8: Influence of inviting different categories at the 1st category chances to win the bids**

From Figure 8 it is observed that, when UNRWA invited 1st, 2nd, 3rd, and 4th categories, the 1st category has the highest chances as being awarded 55contracts out of 122 contracts. Figure 9 illustrates that, when UNRWA invited 1st, 2nd, 3rd, and 4th categories, the 2nd category has the highest chances to be awarded 150 contracts out of 218 contracts. Figure 10 shows that, the third category has also the same chances to be awarded 122 contracts out of 168 contracts when UNRWA invited 1st, 2nd, 3rd, and 4th categories.

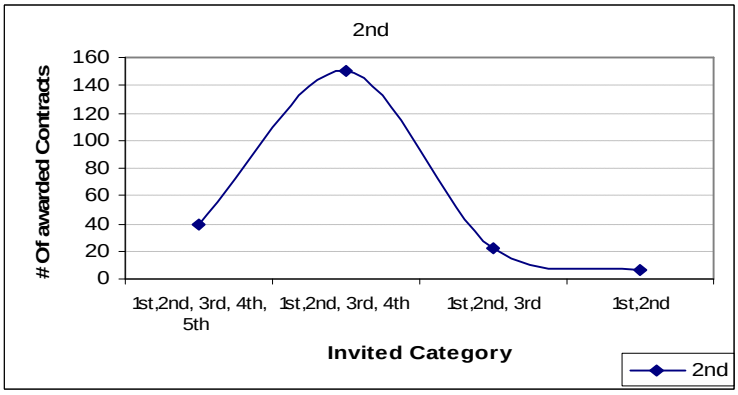


**Figure 9: Influence of inviting different categories at the 2nd t category chances to win the bids.**

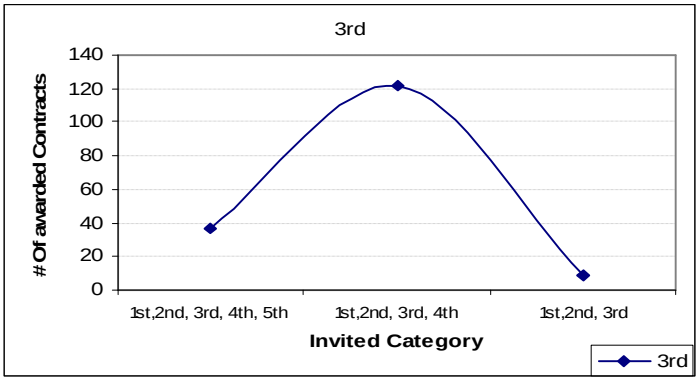


**Figure 10: Influence of inviting different categories at the 3rd category chances to win the bids.**

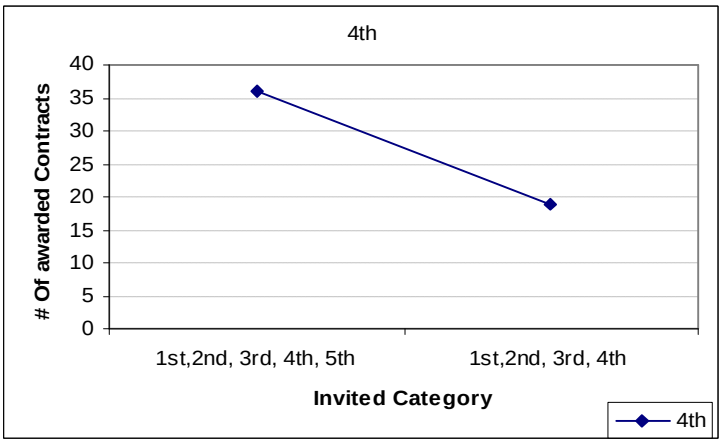


**Figure 11: Influence of inviting different categories at the 4th category chances to win the bids.**

The overall picture can be shown in Figure 12 where different type of invitations was used and the influence of each type of invitation at each category's is compared. Figure 12 shows that under the invitations of four categories (1st, 2nd, 3rd and 4th), the chances for the 1st, 2nd and 3rd categories to win bids are the highest. The chances of 4th categories to win bids are the highest when inviting the five categories (1st, 2nd, 3rd, 4th and 5th). The chances of the fifth category to win bids respect to other categories are very weak. This will give an apprehension to the clients to consider the invitation

of four categories to attain both contractors' benefits and successes during the bidding participation process and clients advantages.

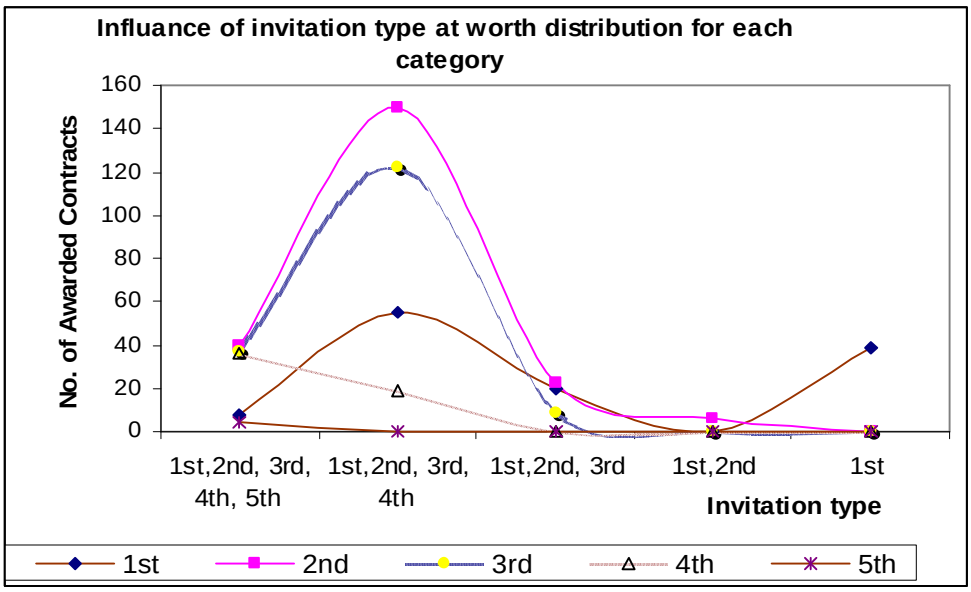


**Figure 12: The influence of each invited type against the number of awarded contracts**

**Number of the awarded contracts per each category**

As illustrated in Table 13, the construction, maintenance and repair contracts were awarded to 155 participated contractors. Some of those contractors may be awarded more than one bid.. 45 contractors from 2nd category, 42 contractors from 3rd category and 42 contractors from 4th categories was awarded around 78% of the total number of awarded contracts during this period (2002-2007). Only one contractor from the 5th category was awarded four (4) contracts during that period. The number of contractors who were awarded the construction, maintenance and repair contracts where shown in Figure 13.

The important issue than can be considered from this results is how to enhance the chances of the 5th categories and promote their capabilities to compete and win bids, such point will support the participation and competitiveness level and sustain the benefits of all parties.

**Table 13: Number of the awarded contracts per each category**

| | Number of contractors | | | | | | |
|---|---|---|---|---|---|---|---|
| **Type of contracts** | **1st A** | **1st B** | **2nd** | **3rd** | **4th** | **5th** | **Total** |
| Construction | 8 | 11 | 20 | 21 | 17 | 0 | 77 |
| Maintenance | 2 | 2 | 16 | 13 | 21 | 1 | 55 |
| Repair | 0 | 2 | 9 | 8 | 4 | 0 | 23 |
| Total | **10** | **15** | **45** | **42** | **42** | **1** | **155** |
| | **6.45%** | **9.68%** | **29.03%** | **27.10%** | **27.10%** | **0.65%** | **100%** |

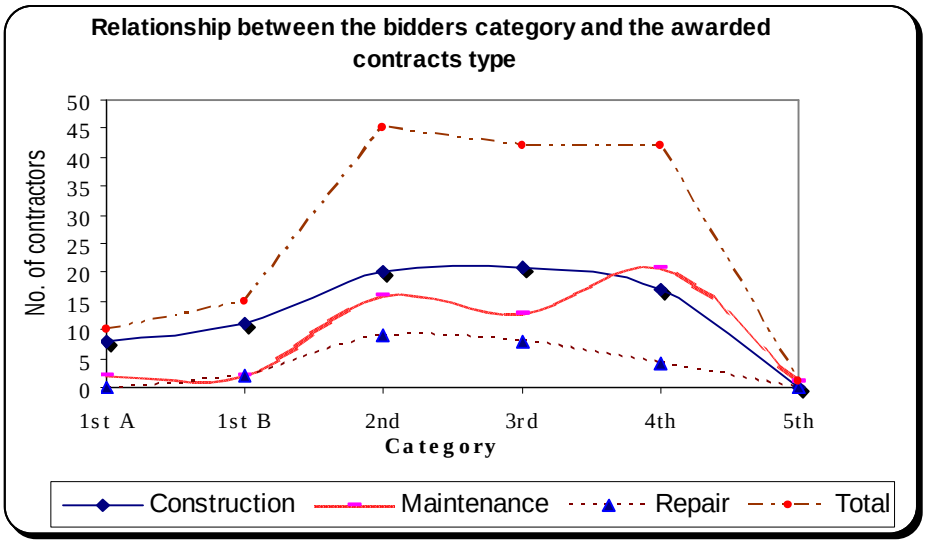


**Figure13: Relationship between the categories and the number of awarded contracts**

From Figure 13 it can be observed that, the highest warded contracts were from construction, while the lowest awarded contracts were from repair works. The Figure shows also that, approximately, the 1st, 2nd, 3rd, and 4th categories have consistency in the awarded contracts, while the consistency in the maintenance tenders related to awarded contract are not clear. From Figure 13 it can be concluded also that, the different categories prefer the participation and competing in the construction tenders rather than others. Moreover, the contractors' tendencies to compete in the maintenance tenders are deviated from category to other.

**Contractors Bidding Behaviors in Palestinian**

**Financial distribution of the awarded contracts overall categories**

Although the 2nd and 3rd categories are the highest categories which win a number of bids, from the financial point of view, these two categories were not the highest. From Table 14 it can be observed that, financially, the first "1st" category was the highest category that was awarded contracts during that period of study. The total value of the awarded contacts for this category was USD 70,410,209.0 being 67.68% of the total awarded contracts. The second "2nd" category was awarded USD 17,432,934.0 while the 3rd category obtained USD 10,549,197.0. This means that the total value of the awarded contracts for the 2nd, 3rd, 4th and 5th categories are less than what the 1st category was obtained. This results will not reflect a consistency of the worth distribution although it was appeared consistent and distributed reasonably respect to the number of awarded contracts. This reason returned mainly to the large size of projects that the UNRWA advertised to the local contractors, and such large contracts are over the financial capabilities of the 3rd, 4th, or 5th categories, accordingly, the 1st category will monopoly these large projects. If the UNRWA adopt a strategy to improve the financial capabilities of the small bidders as well as the 1st category bidders, it is reasonable to split the huge contracts if applicable and achievable to match the financial, managerial and technical capabilities of the other categories.

**Table 14: Financial distribution of the awarded contracts overall categories**

| Category | Total contract amounts ($) | % respect to the Total |
|---|---|---|
| **1st** | 70,410,209.00 | **67.68%** |
| **2nd** | 17,432,934.00 | **16.76%** |
| **3rd** | 10,549,197.00 | **10.14%** |
| **4th** | 5,554,197.00 | **5.34%** |
| **5th** | 82,118.00 | **0.08%** |
| **Total** | **104,028,655.00** | **100%** |

## Conclusions

The results of this study indicated that, the tender amount has a nominal influence on the bidders' participations process with an average response rate of 52-56 %. The project duration shown a clear influence at the bidders' participation, the response rate and the participation level become high with the increase of the project duration. The response rate and the volume of participation were in general weak over the repair works. The reasons may return to the complexity, uncertainty and high level of risks of these projects in addition to its special fragmental characteristics.

The bidders have a strong trend to participate in the construction tenders higher than the maintenance and repair tenders. This trend could be traced to the fact that these types of tenders have higher certainty than other types. The results reflect also that, the bidders' trends to participate in the tenders in both summer and winter seasons are higher than other seasons. The reason retune mainly to the fact that the UNRWA's projects in these seasons are less than other seasons, and due to the awareness of the contractors to this fact, they try to participate strongly aiming to reserve and sustain their business and to keep their staff. Such results reflect a good vision from the contractors to keep their staff working for long period. Such process will increase the loyalty and mutual resection and trust between the contractors and their staff.

The fixed bid bond was observed as the best case to enhance, consolidate and brace the participation and responding process within the tendering stage. Such conclusion will be essential and important to the clients' decision makers. The results indicated that the bidders have a pre-understanding concept that the high tender fees means high important project, so the influence of the tender fees were clear at the bidders

participation. The best consistency and worth distribution for the bids overall bidders were observed at the invitation of 1st, 2nd, 3rd, and 4th categories. Such invitation types reflect a good consistent and reliable worth distribution of the contracts' number. The financial contracts distribution reflected that, the 1st category is the highest category that was awarded contracts during this period of time. The financial value of the awarded contracts for the 1st category is greater than all other warded contracts for all categories.

The contractors are recommended to participate/bid in the long duration and short duration projects in a similar tendency. This will attain the benefits for all parties in terms of quality, performance improvement, cost and time mange competences. It is recommended for the clients to adopt a cooperative strategy with the bidders to empower their tendency to participations in the repair works. Reducing tender fees for the repair tenders, reducing the bid bonds and a continuous consultative supports will enhance the bidding process at this type of work. It is desirable for the clients to adopt the fixed bid bond system. This system was observed as the best case to enhance, consolidate and brace the participation and responding process within the tendering stage. Adopting this system by the clients' decision makers will motivate the bidders to participate competitively and honestly. The clients are advised to invite more than three categories to bid in the project to achieve best level of competition and participation, and specially 1st, 2nd, 3rd, and 4th categories. This will achieve the best chances for each category to win the bid. These recommendations are expected to add values for the developments of the construction industry.

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