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Analysis of clients' needs and satisfaction in the construction industry in Gaza Strip

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بسم الله الرحمن الرحيم

"يرفع الله الذين امنوا منكم و الذين أوتوا العلم درجات و الله بما تعملون خبير"

صدق الله العظيم

المجادلة – آية 11

Dedication

This work is dedicated to my parents, wife and family for their endless support

Raif Khamees Al-Shorafa

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Abstract

The construction industry is backwarded compared to other fields of industry all over the world regarding the customer satisfaction issues. This research discussed the clients' and consultants' needs or expectations, based on the levels of implied importance and performance provided by local contractors.

A structured questionnaire was adopted in this study. The obtained data were statistically analyzed to find out the relationship between the obtained results for clients and consultants regarding the importance and the satisfaction with the provided performance by local contractors regarding the identified satisfaction factors based on the relative importance indices of the different factors.

The results revealed that both clients and consultants agreed with each other on the importance of the identified satisfaction factors. They also agreed that they are not satisfied with the provided levels of performance by local contractors, and the contractors need to improve their practices and procedures. These factors were ranked according to the implied importance by both clients and consultants. The most important factors to achieve clients' and consultants' satisfaction were also identified.

The most important factors within the adopted groups were: understanding the contract documents and specifications, managing the site through top management levels, finishing the project within time, budget and quality, providing personal protection equipment, availability of maximum resources, availability of highly qualified personnel, completion of defects and handing over, and finally honesty and integrity in dealing with clients and consultants.

Finally, a conceptual framework was developed showing a methodology for meeting the needs and expectations of clients and consultants in the local construction industry. It was found that the different parties must carry out better communication with each other. Common understanding and cooperation must prevail to achieve better working environment, leading to improved levels of satisfaction for both clients and consultants.

الخلاصة

صناعة الإنشاءات هي من الصناعات المتأخرة بشكل كبير عن غيرها من الصناعات الأخرى فيما يتعلق برضا المالك أو المستهلك ومدى تحقق توقعاته بالنسبة للمُخرج النهائي للصناعة. وقد تم من خلال هذا البحث دراسة احتياجات وتوقعات المالكين للمشاريع العامة والاستشاريين العاملين في السوق المحلية بالاعتماد على مقارنة مستوى الأداء المقدم من المقاولين المحليين مع الأهمية المعطاة لهذه العوامل. كما تم ربط ذلك بمستوى الخبرة والموقع الوظيفي وحجم المشاريع المنفذة بواسطة مؤسستي كل من المالك والاستشاري. وقد اعتمدت الدراسة على استبيان تم إعداده بالاعتماد على المراجع المتوفرة. ومن ثم تم تحليل البيانات إحصائياً لإيجاد العلاقة بين النتائج الخاصة بالمالك والاستشاري من حيث الأهمية المعطاء لعوامل الرضا، ومستوى الأداء المقدم من قبل المقاولين المحليين، وذلك بالاعتماد على معيار الأهمية الخاص بكل عامل من العوامل.

اتضح من النتائج أن كلاً من المالك والاستشاري اتفقا على أهمية العناصر المحددة من خلال هذا البحث. كما اتفق الطرفان ، المالك والاستشاري، على أنهما غير راضيين تمام الرضا عن مستوى الأداء المقدم من قبل المقاولين المحليين في المشاريع العامة المنفذة في قطاع غزة ، وأن مستويات الأداء بحاجة إلى تحسينات على كافة الأصعدة. وهذا يتفق مع النتائج التي توصل إليها العديد من الباحثين في العديد من الدول المتطورة والنامية حول العالم.

وجد من خلال الدراسة أن أهم العوامل كان الفهم الدقيق لوثائق العطاء والمواصفات الخاصة به، وإدارة الموقع من خلال المستويات الإدارية العليا، والحرص على إنهاء المشروع في حدود الزمن المحدد والميزانية الموضوعة، وبالجودة الفضلى، بالإضافة إلى الحرص على احتياطات الأمان في الموقع، والحرص على توفير الموارد البشرية والمواد اللازمة، علاوة على الاهتمام بعمل الملاحظات المطلوبة في العمل وأثناء مرحلة التسليم، كما كان من أهم العوامل: الأمانة والتكامل في التعامل مع كل من المالك والاستشاري. كما تم ترتيب العوامل حسب أهميتها من وجهتي نظر المالك والاستشاري وعليه تم تحديد أهم العناصر لكل طرف. وتم اقتراح إطار نظري يحدد العوامل اللازمة لتقييم وتطوير الأداء المقدم من قبل المقاولين المحليين وذلك بالاعتماد على النتائج التي تم الحصول عليها. كما تم التوصل إلى أنه بمزيد من التواصل والتفاهم والتعاون بين أطراف تنفيذ أي مشروع إنشائي بأنواعه ، سيتم توفير بيئة أفضل للعمل ولصناعة الإنشاءات بشكل عام يمكن من خلالها توحيد الجهود لتحقيق الأهداف لكل طرف من الأطراف من خلال تحسين الأداء والرضا عنه وبالتالي المردود منه.

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LIST OF ABBREVIATIONS

CCC	**Central Contracting Committee**
GDP	**General domestic product**
GPC	**General Personnel Council**
MEHE	**Ministry of Education and Higher Education**
MOG	**Municipality of Gaza**
MOH	**Ministry of Health**
NDC	**Non-Governmental Organizations Development Center**
NGO	**Non-Governmental Organization**
PCU	**Palestinian Contractors' Union**
PECDAR	**Palestinian Economic Council for Development and Reconstruction**
PED	**Palestinian Economical Development**
PNA	**Palestinian National Authority**
RII	**Relative importance index**
SPSS	**Statistical Package for Social Sciences**
UN	**United Nations**
UNDP	**United Nations Development Program**

Chapter 1: Introduction

1.1. Introduction:

Gaza Strip is one of the highest population density areas in the world and it is estimated about 3,800 persons/Sq. Km. A lot of pressure was put on the economy to sustain a certain level of living for Gaza residents. In addition, during the current Intifada the Gazan economy has been the target of many Israeli actions such as the bulldozing of land, commercial and industrial establishment. Border closures and internal closures were imposed. These measures together with the already weak economy worsened the economic situation in Gaza to the point that it is no longer able to sustain the pre Intifada level of living. (Gaza Strip Economic Development Strategy, 2005)

The construction industry is one of the major sectors that are supporting and highly influencing the Palestinian Economy. That sector was widely expanded since the establishment of The Palestinian National Authority (PNA) in 1994. This caused flourishing in the construction industry and other supporting and dependent industries from other sectors; due to the different donors that targeted the West bank and Gaza Strip to implement development projects in the fields of infrastructure, housing and the other different facilities.

1.2. Problem statement:

Construction sector has been considered the largest sector in term of growth. It attained (26%) of the Palestinian GDP in 1994, ranking second after services and commerce (48%) and before agriculture (14%) and industry (12%). This sector also created jobs for thousands of people in many fields. The construction sector provided about (33%) of the Palestinian GDP according to The Palestinian Contractors' Union in 2003. At the same time, about 10.8% of the Palestinian's direct working force and about (30%) of the indirect working force, after the Israeli troops reoccupied the Palestinian Territories. (Palestinian Contractors' Union, 2003)

One of the major problems that affect the construction sector everywhere and in Palestine is the sector's internal structure, which includes a large number of small contractors that can be considered subordinate of the industry. The relatively easy entrance into the lower end of the market, and the relatively easy exit, require low technical skills from the contractor. This situation reflects the high risks and the corresponding high failure rates amongst small contracting enterprises.

During the last years, the construction sector had to evolve through informal trial and error business practices. It received very limited institutional support and was poorly represented at decision-making levels. The limited exposure that this sector encountered; provided limited opportunity for developing and testing capacity and thus resulted in low performance standards and different kinds of problems. This had an influence on the level of satisfaction provided by different contractors in the local community. This study is going to investigate and analyze the clients' and consultants' satisfaction in the construction sector of industry.

The problem statement of this research can be stated as “the absence of a clear vision of the requirements of clients and consultants on which the contractors’ performance is being judged and evaluated”.

1.3. Definitions:

First of all, it is important to put some definitions related to the topic to be as a guideline for the study. It is obvious that the definition of client satisfaction and its factors will differ from one community to another and also from one researcher to another. The main term in this study is the "client satisfaction" and it consists of two words:

- ***Client:*** Ahmed and Kangari, (1995) defined the client as the one who pays the bills, and he is most likely to be satisfied when his perception of the service matches or exceeds his expectations, at the same time his perception may differ from the contractor’s perception. Also, the “***Client***” is the party or parties, which interface with the construction industry in the procurement process. (Australian Procurement and Construction Council Inc. - APCC)
- ***Satisfaction:*** is defined as the result of some comparison process in which expectations are compared with what is actually received.

  Also, ***satisfaction*** can be defined as the client's cumulative memory of many positive experiences, but positive experiences can be tarnished by just one bad experience. (Ahmed and Kangari, 1995)

There are some other terms related to that topic, these are:

- ***Perception:*** which is defined as the client's or consultant's impression and feeling about a service process.
- ***Expectation:*** That is a belief or anticipation of what will happen as a result of an action. (Malony, 2002)

From all above a definition could be derived for the ***client satisfaction*** as a whole phrase to be "an aesthetic feeling felt by the client and happens when he feels that he achieved the best value of his money to obtain a service depending on some predefined conditions and factors based on his knowledge and cumulative experience".

1.4. The aim and objectives of the study:

The aim of this study is to analyze the clients' and consultants' needs and satisfaction in the construction industry in Gaza Strip. This was achieved through a number of objectives, these were:

1. To identify the main satisfaction factors for the clients and consultants that must be considered by contractors, and to rank them according to their importance.
2. To investigate the relationship between the "importance", defined by clients and consultants, and the "performance" provided by the contractor; to reveal their relation with the level of satisfaction provided from the perceptions of both clients and consultants.
3. To develop a framework through discussion of the defined factors, through statistically testing the basic general hypothesis of the thesis considering the defined categories of satisfaction factors.
4. To investigate the clients' and consultants' perceptions of doing repetitive work with the same contractors in the future works.

1.5. Methodology:

1. Literature review:

A comprehensive literature review will be carried out, to have better understanding for this topic, and to have a wider view by making use of the experience of previous researchers from different communities. This could be achieved by defining the previously tested factors by other researchers in different communities, the data investigation strategies and the appropriate analysis concept and theories.

2. Questionnaire structuring and pilot study:

In the light of the literature review and after having some interviews with practitioners and statisticians, the best approach in structuring the questionnaire will be defined, at the same time the interviews indicated some factors dependent on or related to the local community practices that may were not studied in the communities investigated in the literature review. Also, a pilot study was conducted to modify questions, factors or

approaches. The level of acceptance by respondents was investigated, to achieve maximum response by the chosen sample from the population.

3. Data analysis:

After collecting enough data by testing the sample, clients and consultants, chosen from the population to be representative to the industry, the data were analyzed and the results were documented. The analysis of the data were carried out in two directions; the first was to measure the level of satisfaction provided by the contractors in each of the factors under consideration and to find out which factor is most satisfied by contractors and which is the most wanted by the client and consultant to be satisfied by them. The second direction was to measure the correlation between satisfaction provided from the point of view of the client and from the point of view of the consultant.

4. Results and discussion:

The results were discussed and analyzed to obtain the correlation between the data and the investigated sample.

5. conclusions and recommendations:

Comments and conclusions was gathered and developed based on the obtained and analyzed data and finally the recommendations were added.

1.6. Expected outcome:

The expected outcome was to identify the factors of satisfaction of clients and consultants, that they expect the contractor to provide in his performance during implementing a definite project. These factors will be analyzed and ranked according to their importance to the client and the consultant, and the correlations between these factors were studied. The study should provide us with better understanding of the level of performance provided by the contractors, and then new approaches that could be recognized by them to improve client's and consultant's satisfaction. This could lead to expand the contractors' market share in the local market of construction industry in Gaza Strip. Finally, a basis would be established for an evaluation process of the construction services provided in that industry, by analyzing the collected data and defining the binding factors and measures of satisfaction and the correlation between different points of views of the industry’s parties.

Chapter 2: Literature Review

2.1 Introduction

Client satisfaction is a fundamental issue for construction participant who must constantly seek to improve their performance if they are to survive in the presence of the concept of globalization of construction services. (Cheng et al., 2006) The previous literature that considered the issue of client satisfaction will be reviewed in this chapter. The different factors considered by different authors and researchers will be identified to reach the important factors that shall be considered and that coincide with the local industry of construction. This chapter will comprise the following subjects: definition and concept of client satisfaction, service characteristics and the influence of the different stages on the client satisfaction, the influence of contractor selection on satisfaction and finally the improvements required by contractors to reach better satisfaction of clients and consultants.

2.2 Definitions

Jin and Ling (2006) combined the client satisfaction with the project success concept, in other words, they defined the project success as "meeting time, cost and quality objectives and satisfying project stakeholders". If the definition was rearranged, it could be clearly reached that "satisfying the project stakeholders (clients) is reaching the project success by meeting time cost and quality objectives. The authors also defined some success factors leading to the client satisfaction, these were: project mission, top management support, project schedule and plans, client consultation, personnel, technical expertise, client acceptance, monitoring and feedback, communication, and troubleshooting. The authors concentrated in their study on aesthetic side of the process and specially the relationships between project parties.

Ling and Chong (2005) in their study of service quality of design and build contractors in Singapore, found that the antecedent of *customer satisfaction* was the service quality. The service quality as perceived by customers was defined as the extent of discrepancy between customers' expectations or desires and their perceptions. The authors defined the *expectations* as the desires and wants of customers, i.e. what they feel a service provider should offer. They also stated that *perception* refers to the customers' evaluation of the

service provider. The key to ensure good service quality is meeting or exceeding what customers expect from the service, and five generic determinants were defined; these were: reliability, responsiveness, assurance, empathy, and tangibles.

Kärnä (2004) defined the *customer* as the owner of the project and the one that needs the construction facility, he is also the buyer of the product or service and he is a body that incorporates the interests of the buyer of construction services, prospective users and other interest groups. The Author then defined the *customer satisfaction* as a function of perceived quality and disconfirmation, i.e. the extent to which perceived quality fails to match repurchase expectations.

The author also mentioned that the customer compare the perceived performance of a product (service, goods) with some performance standard. Customers are satisfied when the perceived performance is greater than the standard (positively disconfirmed, and vise versa. Also the author defined the *customer satisfaction* as how well a contractor meets the customer's expectations, and the quality on construction projects can be regarded as the fulfillment of expectations. (Kärnä, 2004)

2.3 Client satisfaction in construction

Considering the market of construction industry around the world the construction industry is back warded and under-researched in the client satisfaction issues as a soft performance criteria and it is still at an early evolutionary stage (Kärnä, 2004). Client demands are rapidly changing as a response to changing organizational and market imperatives. New procedures and solutions are required to meet the growing demands and elevated standards (Smith and Love, 2001).

The function of the construction industry is to provide customers with facilities that meet their needs and expectations. One principle of logistics is a management philosophy that effectively determines the needs of the customer. Ensuring operational quality at each stage in the construction process should insure that the quality of the final product will satisfy the final customer (Jang *et al.,* 2003).

The satisfaction as a concept can be considered from two points of view, the first is the satisfaction of the clients such as large companies, municipalities and governmental bodies that need facilities, building projects, infrastructure … etc. The second is the satisfaction of the end users or beneficiaries of these facilities or services. That concept is considered in some evaluation standards, such as The ISO9000 for instance. One of the causes of client dissatisfaction is the clients' failure to choose the adequate procurement procedure (Hanson *et al.*, 2004).

2.3.1 Client satisfaction and performance of consultants

In this study, the satisfaction provided by contractors is the main aim. But the construction processes have always had three conventional partners. These are; the clients, consultants and contractors. So, it was foreseen, the importance of taking an overview on the satisfaction provided by consultants. Cheng *et al.* (2006) stated that decisions such as choosing an appropriate contractor without appropriate consultation can result in poor project performance and ultimately lead to client dissatisfaction.

Ng (2005) investigated both the importance and performance provided by consultants in Hong Kong from the point of view of clients. The investigated clients were governmental, quasi-governmental and private clients. The study was based on ISO 9000 quality management systems implementation. The result was that the respondents considered the consultants' performance as acceptable, but they were less satisfied in certain project related aspects. The results of the authors' survey revealed that the actually received benefits received from consultants were lower than the expectations. The author finally recommended the consultants to seek feedback from their clients and review their service quality (Ng, 2005).

To construct an architect selection model for property developers' project managers in Singapore, Ling (2003) mentioned the Organizational Psychology's theory of job performance that defines two aspects of job performance: 1) task performance and 2) contextual performance. The task performance is the proficiency and skill in job specific tasks and differentiates one job from another. And the theory of task performance states that the criteria for evaluating job performance are "general mental ability", "job

knowledge", "task proficiency", and "job experience". While the contextual performance arises because people usually works in an organizational setting and therefore need to communicate with one another, coordinate actions, follow instructions, and occasionally go beyond their job descriptions. The theory of contextual performance states that five criteria are used to evaluate contextual performance: "conscientiousness", "initiative", "controllability", "social skills" and "commitment". These attributes were adopted in the authors' questionnaire and used to construct the architect selection model. (Ling, 2003)

Kalay (1999) discussed the concept of satisfaction functions; to deal with the fuzziness of desirability. These functions were first introduced in 1970's, and they were mappings (curves) that expressed the specific relationship between the behavior of a system and the subjective measure of its desirability under specific circumstances. The curves demonstrate several phenomena commonly associated with satisfaction and demonstrates that the client may generally be satisfied with the behavior of the system, until its behavior in some area reaches a certain threshold, moving generally from 100% (completely satisfied) to 0% (not satisfied).

2.3.2 Satisfaction and service characteristics

The client's satisfaction has two parts; the first is an *aesthetical* and the second is *physical*. That is, the impression and feeling about the service by the client is a major factor that, if was positive, will lead to satisfaction. The impression here is affected by the contractor's following characteristics: Process, Performance, Management, image of company and Relations with client. At the same time, physical factors also play an essential role to bring in satisfaction to the client, for instance: The financial abilities, equipment, skilled personnel and quality… etc. All of these are keys to achieve client's satisfaction. It was found that the quality of service is the most important factor that leads to satisfaction compared to other factors such as: time, cost, client orientation, communication skills and response to complaints.

These were the main categories of the questionnaire adopted by Ahmed and Kangari (1995) in their analysis of client satisfaction factors in construction. One of the important principles mentioned by Ahmed and Kangari, when designing the questionnaire was a

main two questions in mind. The first was “What factors do clients perceive as being most important when dealing with contractor organization?” and the second was “How do perceptions of clients differ between the industries under consideration?”.

Maloney (2002) mentioned the concept of construction product service and customer satisfaction when he stated that on-time performance is a factor that is likely to be of importance on any project, but it may be more important on some projects than on others. After choosing a contractor the client can determine the quality of the service provided by observing some determinants as follows:

1. Access: which indicates the easiness of contact between the owner and the contractor and at the same time the willingness of the contractor's staff to meet with the owner and to meet with the appropriate person who can help the owner to solve his problem or answer his questions.
2. Communication: means keeping customers informed with all about the project in an appropriate language for the client's understanding, especially the financial and general progress issues.
3. Competence: that the contractor shall provide well skilled personnel, technicians and craftsmen. This will guarantee better performance during implementation, leading to the expected quality.
4. Courtesy: considers interpersonal relationships, such as politeness, respect, consideration, friendliness of contact personnel, care of details and person to person interaction.
5. Credibility: means trust worthiness, believability and honesty. Also, company name, reputation and characteristics of contact personnel in contact with client.
6. Reliability: involves the level of professionalism of the contractor, i.e. the staff skills, if they honor promises… etc.
7. Responsiveness: concerns willingness or readiness of employee to provide the service. This includes response to requirements in timely manner… etc.
8. Services: freedom from danger, risk or doubt, it involves physical safety. Financial security and confidentiality. This is dependent on the kind of the project.
9. Tangibles: include physical evidence of the service, such as physical facilities, appearance of the personnel, tools or equipment used to provide the service and physical representation of the service.

10. Understanding and knowing the customer: i.e. understanding the contractor's needs and learning his specific requirements. (Maloney, 2002).

Chinyio, *et al.,* (1998) discussed that if clients' requirements have been adequately evaluated, projects could be planned with more certainty and better client satisfaction could be achieved. The authors quantified the clients' construction project needs using the technique of paired comparisons. Their study has involved the ranks of sixty clients, for eight project needs, these were: aesthetics, economy, function, quality, working relationships, safety, lack of surprises and time. The predominant needs were found to be quality, safety and function. It was also concluded that clients didn't want their needs to be assumed and client advisers who assume that cost and time are always clients' primary needs may be in error. And it is more useful to clients is a dynamic model for scaling their needs as each project is encountered.

Serpell and Alarcón (1998) proposed a methodology for improving the process of construction, and mentioned the importance of conducting a clients' satisfaction survey to obtain information of the satisfaction level of clients and to evaluate the value given by them to different product and service features.

2.3.3 Contractor characteristics and selection

Maloney (2002) stated that the customer's expectations, on which satisfaction is built by doing a comparison with the outcome, regarding the service is a function of three factors:

1. Word of mouth about the contractor or similar contractors.
2. The customer's past or direct experience with the contractor or similar contractors. and,
3. The customer's personal or corporate needs.

If knowledge gathered by the contractor about each customer and their projects, he will have to identify the most important criteria for its clients on each project, when these criteria are identified, the contractor can formulate the client's expectations that are important in any consideration of satisfaction. If the contractor couldn't achieve that, he would be excluded from future choice made by the client.

Maloney (2002) mentioned some factors involved in contractor selection that could guarantee satisfaction can be mentioned to be:

1. *Contractor/customer relationship:* considers the customers' view of a contractor in terms of trust, respect, integrity, willingness to partner, responsiveness and communication abilities.
2. *Project management:* considers the ability to plan, schedule, manage and execute all aspects of project from the conceptual design stage to project completion.
3. *Safety:* considers the commitment to the regulations, maintaining a safe work environment and employing workers with safe work habits.
4. *Prepared/skilled workforce*: considers the employees' knowledge of codes and techniques with quality performance.
5. *Cost*: considers the ability of contractor to manage project cost activities, providing lower cost alternatives, change orders' pricing and project building activities.
6. *The general satisfaction*: considers the general satisfaction of customer with the contractors' performance.

Selection criteria can express the factors that brings satisfaction to the client, some of these criteria were defined by Al Reshaid and Kartam (2004); while proposing an approach of three stages in prequalification and tendering in design-build projects, these factors were listed in the second stage, evaluation process of submittals, as follows:

1. Technical evaluation:
    - General – completeness and quality of submission.
    - Structure and organization – activities, experience, anticipated strategy, procurement and organization.
    - Personnel – availability of technical, administrative and field personnel.
    - Plant and machinery – availability of suitable construction equipment.
    - Other resources – subcontractors, fabrication facilities, shop drawings, and hardware and software availability.
    - Company's experience – value and type of executed projects.
    - Credentials of the autonomous design firm that is part of the Design–build consortium.

2. Financial evaluation:
    - Value of executed projects – last 5 (+) years and ongoing work.
    - Audited financial statements.
    - Bank references and bond-ability proof.
    - Financial power – ratios of assets/liabilities/shareholders equity.
3. The last stage of the approach focused on project requirements. In this stage, the following general areas were considered:
    - Experience in design–build projects in general.
    - Experience specifically in similar projects.
    - In-house vs. joint venturing of design and construction capabilities.
    - Project control methods used – value Engineering, quality and cost control. (Al-Reshaid and Kartam, 2004).

Wong *et al.* (2003) defined the independent variables for developing contractor classification models to be: 1) Staff quality and experience, 2) Plant and equipment suitability, 3) contractor site management and capabilities, 4) Health and safety, 5) past performance on similar projects, 6) Contractor reputation and image, 7) Contractor capacity and work load and 8) Contractor's proposals.

2.3.4 Quality of construction service

The construction project process has a quite complex nature due to changing in project organization and uniqueness of each project circumstances. That makes it so difficult to exploit past experiences and customer feedback in future projects to ensure similar success through quality product and process performance. According to Kärnä (2004), quality can be defined through two approaches: 1) conformance to requirements, by conformance to specifications from the point of view of the contractors, and 2) customer satisfaction, by defining the extent to which the product or service meets or exceeds the customer’s expectations.

It was found that customers were satisfied with the contractor's abilities to cooperate with them in addition to existence of good skills for the contractor's workers and supervisors. The dissatisfaction appears in the late stages of the project such as quality assurance and

hand over, due to unplanned completion stage or not well designed. Five main categories, with a number of attributes belong to each one, were defined in studying the customer satisfaction in both private and public sectors of construction, and these categories were:

1. Quality assurance and handover.
2. Environment and safety at work.
3. Personnel.
4. Co-operation.
5. Site supervision and subcontracting. (Kärnä, 2004)

In Hong Kong Phua and Rowlinson (2004) studied the importance of factors of construction project success. The authors studied the importance of these factors in a number of issues, these were: 1) The cooperation in general (e.g. cooperation between firms, communication, cooperation within firms and procurement systems.), 2) Micro project environment, 3) Contractual characteristics, 4) site conditions and 5) political economic stability. The authors revealed that intra-cooperation factors were more important than inter-cooperation factors.

In Singapore, Ling and Chong (2005) defined five determinants of service quality provided by design build contractors, these were reliability, responsiveness, assurance, empathy and tangible. Forty-three (34) attributes to the main determinants of service quality were identified. The authors found that clients considered the reliability of the design build (DB) contractor to be the most important determinant. But as a whole, the design build (DB) contractors' service quality performance didn't meet the client's expectations in all of the 34 attributes. The authors concluded that contractors shall try to achieve the following in order to provide clients with a higher level of service quality: 1) appointing competent project manager with full knowledge of the requirements of the work to lead the team, 2) building better design management and project management capabilities, and 3) achieving high degree of cooperation by sharing goals and develop ability to solve conflicts quickly within the team.

2.3.5 Client's experience

The previous sections mainly considered the point of view of the client, but at the same time client satisfaction can be used as an indication for the quality improvement program

of the contracting company it self, i.e. if the clients are satisfied, that means that the company is improving its performance and developing the standard of the provided services or products.

Kärnä (2004) argued the importance of the role of the customer's expectations, and he mentioned some factors related to that issue, these are: 1) customer's past experience with contractors in providing such services, 2) word of mouth information about the contractor, 3) the customer's personal needs, 4) image and reputation of the contractor, and 5) the investment of the customer him self in the project.

In case studies investigated in UK, Briscoe and Dainty (2005) stated that the clients approach in the supply chain management and the integration involved were varying by his choice of other parties and the interrelationships between them; to reach the required integration and long term trust. This included subcontractors and suppliers who were key players in construction process and supply chain.

2.3.6 Client satisfaction and safety considerations

Almost all of the discussed studies revealed that safety was a major aspect considered by clients and consultants. Many authors (e.g. Kärnä, 2004; Malony, 2002; Soetanto et al., 2001; Chinyio et al., 1998) mentioned safety considerations as a dominant factor in all phases of any construction project. The policies followed, the rules and regulations adopted and the previous records of a contractor, all together influence the selection and by the way the satisfaction of clients and consultants. Hinze (1997) mentioned that, on some project, the contractor will be asked to comply, not only with applicable local laws governing safety, health, and sanitation, but also with the owner's requirements may simply echo provisions already contained in the company safety program. Requirements that might be imposed by the owner or the consultant include but not limited to the following items:

1. Personal protection equipment.
2. Availability of first aid supplies.
3. First aid training for the job site personnel.
4. Authorization of visitors and insuring compliance with safety regulations.

5. Availability of fencing when required.
6. Checking the equipment regularly.
7. Availability of safety director.
8. Availability of safety plan.
9. Compliance with local safety regulations. (Hinze, 1997)

2.3.7 Preconstruction stage and satisfaction

Othman *et al.*, (2005) related the satisfaction to an early stage of the project development which is the brief development, and mentioned that client brief development is the key factor in measuring client satisfaction in the later phases of the project development of sequences and milestones. It was found that the client brief development and the parties involved in it are mostly influenced by client organizations, design firms, constructors and funding bodies. And it was emphasized that the full cooperation and coordination between different parties involved in any project is very important in all phases will decrease the deficiencies during implementation, disputes beyond parties and dissatisfaction of the end users; leading to an integrated customer satisfaction.

Egemen and Mohamed (2005) stated that many construction organizations perceive that high quality of work, supported by an impressive track record, wide field of historic, recent and current performance is enough and this is not right any more. Clients are becoming more aware of having best value of their money from the contracting organizations, and they require high intention to their specific needs. The clients are shifting their evaluation criteria and procedures from “lowest price wins” to “multi-criteria selection”. The authors assured that the clients, even if the main performance quality characteristics, (time, cost and quality) were achieved; they prefer every dimension of the service to satisfy the clients’ requirements and perceptions. It was mentioned that the relationship marketing concept to develop a long term contract with clients to target their needs and satisfy them and the failure to do this will result in excluding the contractor from future opportunities to work with a certain client. The authors reached a rank for a list of eighteen needs that, if achieved, will bring satisfaction; some of them are listed below ranked as the first is the most important:

1. Price compared to client estimate.
2. Previous experience.
3. The image of the contractor… etc.

It can be noticed that the three first factors were related to the pre-construction stage and this reveals the importance of that stage measures and indicators. So, the questionnaire included a special section for it.

2.4 Influence on contractor selection and repetitive work

This section will discuss the influence expected on the concept of repetitive works with the same contractor, by the client's measures of performance and perception of the product or service expected. This was investigated by many researchers and some issues and results of them are summarized here.

Maloney (2002) in his study of the construction product/service and customer satisfaction found that the contractor must have a detailed understanding of the customer's expectation, and be able through his personnel to satisfy those expectations. The inability to bring about customer satisfaction will result in the contractor's exclusion from future bidding opportunities with that customer.

Egemen and Mohamed (2005) found that clients had the willingness to do repetitive works with the same contractors assuming that they are fully satisfied with their performance, and if the contractors made use properly of this; their market share will be increased.

In their study of the approaches of clients and consultants to contractors' qualification and selection, Egemen and Mohamed (2005) studied the clients as three different categories that were villa, apartment and commercial building clients. Al Momani (2000) in his study of the service quality within construction processes, looked to the satisfaction from different point of view, that the contractor when is not having commitment and willingness to satisfy the client, he leads his performance to low levels of quality causing defect in his reputation and continuity of competence in the industry.

Doing repetitive works is mainly about understanding clients and their needs, developing close relationships with them, satisfying them and looking for repeat business in the long run. This concept is very suitable to be applied in the construction industry by its nature. Egemen and Mohamed (2005) in their study of clients' needs, wants and expectations found that almost all of the responding clients are very willing to continue working with the same contractors in the future works if they were fully satisfied with their performance. More than 90% of all the clients from all subgroups said that they would give priority to their existing or past contractor during bid evaluation of their possible future projects. This was considered as a potential for competitive advantage by building relationships based on full satisfaction in service provision.

Kärnä (2004) in his study of customer satisfaction and quality in construction concluded that dissatisfied customer will not work with that contractor in the future, but a satisfied customer would not necessarily guarantee future projects for the contractor. So, the main benefit of high customer satisfaction for a contractor is the opportunity to remain a customer's potential partner in the future. In other words, partnering arrangements follows providing maximum satisfaction.
Jin and Ling (2006) discussed that relationships is one of the important performance matrices considered in their study and mentioned that it is important for relationships to exist after construction work ends, especially when parties seek to collaborate in the future projects.

2.5 Satisfaction provided and Improvements required by contractors:

The performance in any construction project includes different concepts and considers a wide variety of measures for a lot of characteristics. This section will give an idea about the general issues that were found to lack improvement practices and approaches by previous researchers to be considered in this study by comparing results previous researches.

2.5.1 Client's characteristics, requirements and satisfaction

Ahmed and Kangari (1995) argued that knowing well the values and the requirements of the client will enable the service provider (contractor), through his managers and other staff, to devise systems and approaches that uncover the root causes of their quality and

service problems, and implement permanent changes to eliminate these problems. They developed a model based on multiple-regression analysis between the mean scores and two independent variables, these were: client satisfaction factors and clients' groups of industries tested. The equation, after substituting some definite variables with values, results in the mean satisfaction required according to the type of industry and for the chosen client satisfaction factor (Ahmed and Kangari, 1995).

Soetanto *et al.*, (2001) assessed the performance of a number of contractors in the UK by investigating the views of clients and architects. The study highlighted some aspects of performance of the contractors that require improvement. They adopted an approach that involves two measurements, one is the perceived importance and the second is the perceived performance. The authors found that in the UK, adherence to budget (cost performance) and collaborative/spirit of cooperation/team work were the most important contractor performance criteria as considered by clients and architects. The time, cost and quality was in the top ten most important criteria for them. The honesty, integrity and commitment of key persons were considered the most well performed criteria by clients and architects.

Maloney (2002) found that a contractor with knowledge gathered about each customer and their projects will have to identify the most important criteria for its customers on each project. Once these criteria are identified, the contractor can formulate the customers' expectations that are important in any consideration of satisfaction.
Egemen and Mohamed (2005) in their study of the construction market in the northern Cyprus found that clients place extremely high emphasis on price offered. Not only this factor was found to be important, the authors also revealed that, the product's quality and durability, finishing within the budget and on time were found to be very major and important factors for full client satisfaction. The obtained data showed that the clients expect much more than just product quality, finishing on time or within budget for full satisfaction and continuing to do repetitive work. In addition to producing high quality work on time and within budget, firms should also understand the clients' needs develop close relations, deliver high levels of service, induce trust and foster loyalty and then seek repeat business.

Kärnä (2004) conducted an empirical analysis to explore client satisfaction for customers (public and private) in Finland. And he found that the need for contractors to improve performance related mostly to quality assurance, handover procedures and material. The author found that low satisfaction could be found in items related to quality assurance and handing over. These items were workability of handover material and maintenance manual, quality of assignment material, and repair of defects and deficiencies noticed during the handover inspection. This highlighted the importance of quality assurance during the project and its impact on customer satisfaction. The low satisfaction factors usually emerge in later phases of the construction project, and require mutual cooperation between parties. Some attributes reflected vary strongly on how the customer perceives the success of the whole project. the study of projects which have had poor overall customer satisfaction, showed that customers assess the contractor's performance as poor in all areas, even if that was not the case. (Kärnä, 2004)

Xiao and Proverbs (2002) in their comparison between Japanese, UK and USA contractors, regarding the quality performance provided; they found that Japanese contractors complete their construction projects with fewer defects, provide longer defects liability periods and are called upon fewer times during the defects liability period than their UK and US counter parts. UK and USA contractors do seek more regular feed back from their clients that Japanese contractors and generally similar levels of client satisfaction are achieved in the three countries. The superior performance of Japanese contractors were attributed to their deep rooted quality consciousness, closer working relationships with their sub-contractors, and more advanced total quality management systems and quality assurance procedures.

In Jordan, Al-Momany (2000) found that there was an almost complete lack of attentions devoted by contractors to owners' satisfaction which undoubtedly contributed to poor performance. Jordan's construction crisis such as declining market share, low efficiency and productivity, and the rapid construction cost escalation will ultimately hold back construction progress. The author concluded that both design and construction firms have to maintain and improve their performance of this industry, by re-examining their approaches to design the construction progress to mitigate the recurring deficiencies, to reduce cost growth, to improve owner satisfaction. (Al-Momany, 2000)

Hanson, et al., (1994), in their study of the causes of client dissatisfaction in the South African building industry and ways of improvement, summarized the ways by which client satisfaction could be improved by both clients and contractors to be the following:

- Choose suitably qualified / experienced / competent professional team and main contractor.
- Adopt more realistic construction times.
- Cost should not be only consideration in selection of contractor.
- Build long-term relationships with clients and sub-contractors.
- Better reporting by professional team.
- Improving quality control measures.
- Early contractor involvement.
- Competition from similar facilities.
- Unfavorable macro-economic factors.

2.5.2 TQM Principles and satisfaction

Ahmed et al., (2005) revealed the importance of adopting ISO 9000 as a tool of TQM. The authors mentioned customer satisfaction and continual improvement, management commitment, education and training, team work use of tools, employees' involvement and customer service as elements of TQM. The study has compared the US market with the Hong Kong market. The result was that TQM systems have not been widely accepted but in Hong Kong ISO 9000 for example was considered as a prerequisite for bidding for any government project. That is if there was a lack of initiation and promotion from both clients and governments, the contractors will not see an importance to have TQM practices, like what happened in the USA.

Arditi and Gunoydin (1997) in their study of TQM in USA discussed the concept of quality as a general concept from many points of views. They defined quality in general as meeting legal, aesthetic and functional requirements of a project. In the construction industry, the authors defined quality as meeting the requirements of the designer, constructor and regulatory agencies as well as the owner. The authors also mentioned the importance of differentiating between "quality in fact" and "quality in perception". That is

the providers of services or goods that meet specifications achieve "quality in fact". While a service or product that meets the customer's expectations achieves "quality in perception". The authors also raised the importance of differentiating between "product quality" and "process quality". To illustrate that in construction, they mentioned that " product quality" in construction industry may refer to achieving quality in the materials, equipment and technology that go into the building where "process quality may refer to achieving quality in the way the project is organized and managed in the three phases of planning and design, construction, and operation and maintenance. So, an intangible issue is being discussing; that is highly dependent on different factors, and varies from one person to another, either in the same community or from different communities. (Arditi and Gunoydin, 1997)

Another study by Rhodes and Smallwood (2003) considered the defects and rework in South African construction projects; revealed that clients satisfaction predominate among aspects negatively affected by the non-achievement of quality with (71.2 %) score , compared to (75.8%) for cost and (62.7%) for future work and (62.7%) for productivity.
Tam and Hui (1996) mentioned that the TQM is composed of six ingredients; these are: 1) customer focus by knowing his needs and expectations accurately and completely, 2) total involvement, 3) measurement of goals through definite standards, 4) systematic support for quality systems, 5) continuous improvement, even if the customer is satisfied, and 6) recognition and rewards for employees. They investigated the concept of internal customer, i.e. the employees of the provider himself. And based the above six TQM factors on the level of internal satisfaction and harmony within the organization.

2.5.3 Client satisfaction and contractor's internal policies

Ng *et al*. (2004) discussed the satisfaction of employees within the contractors' organizations. They revealed that de-motivating labors and other staff members will bring in losses and performance deficiencies affecting the cost, time and quality of construction product. This will lead to client dissatisfaction, due to non-coincidence between expectations and actual products. That is, the required quality systems to be adopted within contractors' organizations must depend originally to come from the inside of the contractors' enterprises and integrate with other performance measurements.

Love and Holt (2000) stated that if construction organizations are to remain competitive in the longer term, they need to develop and better understand their relations with their customers, suppliers, employees, lenders and the wider community. They mentioned a number of conventional "traditional" performance measures, such as efficiency, return on capital employed, and profitability. These methods were criticized because of many reasons, e.g. over reliance on financial aspects, don't accurately reflect the interests of stakeholders, failure to provide information on what customer really want and don't identify how competitors are performing. New performance measures frameworks incorporating financial measures and business drivers have emerged e.g. performance measurement matrix, the performance pyramid and the balance scorecard. The authors also mentioned that, a quality driven construction organization needs measurement for the following reasons: 1) to ensure that customer requirements have been met, and if not; why not?, 2) to enable establishment of achievable business objectives and monitors compliance there to, 3) provide standards for business comparisons, 4) provide transparency and scoreboards for individuals to monitor their own performance, 5) identify quality problems, 6) give indication of the costs of poor quality, 7) justify the use of resources and 8) provide feedback for driving the important efforts. (Love and Holt, 2000)

Palaneeswaram *et al.* (2005) while studying client satisfaction through the adoption of quality management systems based on ISO9000 standard mentioned that the performance evaluation systems (PE) assess the performance of contractors in the construction project under three main headings such as: 1) input assessment, 2) output assessment and 3) maintenance period assessment. Each of these categories included a number of indicators related to each main category of performance assessment. The analyses of contractors' performance assessments in the pre- and post ISO9000 implementation periods indicated the potential improvements from client's satisfaction perceptions. While the contractors' organizations have not achieved any benefits through the implementation of ISO9000 standard quality management systems, and they expected that a lot of improvements shall have been accomplished.

Lam *et al*. (2004) discussed that benchmarking had become an effective way, in the recent years, of helping organizations to deliver better services through continuous

improvement. They revealed that the project's success is a function of the interaction among project characteristics, project procedures, project management strategies, project-related participants, project market atmosphere and project environment.

Barrett (2000) recommended the existence of two issues to have effectively managed quality of construction project environment. These were quality improvement systems and stable relationships in the different supply chains within any project between different parties. The author proposed a theoretical matrix to achieve the required level of quality, and it is shown in the figure below. This matrix illustrates the different combinations of the integrated organizational and project systems.

2.5.4 The need for client requirements processing

Kamara *et al*. (2000) developed a model for processing client requirements in construction. His study included a definition for the reasons for which client requirements' processing is needed. These were: 1) the complexity of clients', organizational issues, decision making, integrated needs and users satisfaction, of the construction process, 2) the wide variety of client and project requirements, e.g. site, environmental, design, construction and lifecycle requirements, and finally, 3) collaborative working among professionals involved in the design and construction stages.

Ugwu and Haupt (2007) discussed the indicators and the assessment methods for infrastructure sustainability in South Africa as a developing country. The authors aimed at defining the essential indicators for sustainability – driven decision making by stakeholders at the project level. The main categories of indicators adopted in the study were: Environment, society, resource utilization, health and safety project management.

Chan and Chan (2004) while developing the key performance indicators (KPIs), defined the following factors, that the authors foresaw their importance for defining the KPIs, these were: The KPIs are general indicators of performance that focus on critical aspects of outputs or outcomes, having too many key performance indicators (KPIs) can be time and resource consuming, the key performance indicators (KPIs) chosen shall be

continuously used over a number of projects, data collection must be made as simple as possible, large sample size required, and the indicators must be accepted, understood and owned across the organization, the defined key performance indicators (KPIs) shall be subject to change and refinement, and graphic display of key performance indicators (KPIs) need to be simple in design, easy to update and accessible.

2.5.5 Performance measurement

Cheung *et al.* (2004) presented a web-based performance measurement system, with eight main categories of performance. These were: people, cost, time, quality, safety and health, environment, client satisfaction and communication. Arayici and Aouad (2005) recommended a computer integrated construction system, to reach requirements' engineering. The system had an essential requirement; that this system is highly dependent on wide sharing of construction information.

2.6 Summary

For being more consistent, it was foreseen the importance of summarizing this chapter according to the proposed objectives of this research as follows:

2.6.1 Identification of the main satisfaction factors

The identification of the adopted one hundred and three (103) satisfaction factors was supported by a number of researches, e.g. Soetanto et al. (2001), Egemen and Mohamed (2005), Ahmed and Kangari (1995), Kärnä (2004) and Al Momany (2000). These items were adopted modified gathered and categorized into eight groups and they formed the main part of the prepared structured questionnaire of this study.

The characteristics of the proposed sample of clients and consultants. That is, when the client is dealing with a large number of contractors and different types and sizes of projects, he will have better standard for evaluating the overall performance to judge the provided satisfaction by the contractors dealt with locally.

2.6.2 Concept of repetitive works

The concept of repetitive works was investigated through researches by Maloney (2002), Al Momany (2000), Egemen and Mohammed (2005), Kärnä (2004) and Jin and Ling (2006). And the correlation between the concept of satisfaction, as a measure of total quality management, and the approach of doing repetitive works with the same contractor based on the provided satisfaction. This was considered by a section in the developed questionnaire.

2.6.3 Importance – Performance comparison

Using the concept adopted by Soetanto *et al.* (2001), a base was established for comparing the importance of different satisfaction items with the performance provided by local contractors, through structuring two measures in the questionnaire for the same item. The first was for the ideal importance for the point of view of the client or the consultant and the second was the performance provided by local contractor.

2.6.4 Contractor performance evaluation model

Finally, a number of researches were reviewed, e.g. Ng (2005), Ling (2002), Jang *et al.* (2003), Wong *et al.* (2003) and Tang *et al.* (2003) to define the adequate statistical analysis methodology to represent the obtained data through the questionnaire, and to construct the proposed contractor performance evaluation model.

Chapter (3): Research Methodology

3.1 Introduction

This chapter will discuss a step by step scientific methodology for this thesis. It will include, but not bounded to, a summary of the literature review outcome, and how the satisfaction factors were identified. It will also describe the hypothesis initially adopted for the study in addition to the analysis methodology. The procedure followed in choosing the sample space after conducting a pilot study, and how the structured questionnaire were modified and finalized to be ready to test the satisfaction in the local market. The characteristics of the respondents will be illustrated, and finally the validation testing will be summarized for the adopted questionnaire.

3.2 Research activities and design

This section will discuss the general approach adopted in this research divided into six phases:

3.2.1 Phase (One): Topic selection

A number of brain storming sessions with the supervisor, experts and professional practitioners in the field of construction management. This led to the selection of the research topic. A general concept for the thesis was "The client's and consultant's satisfaction of contractors' performance". This was supported by a preliminary search from previous related studies. As a result a better understanding for the topic and more clear vision for the topic and the appropriate approach for the study was formed.

3.2.2 Phase (Two): The proposal

The opinions and points of view of practitioners and professionals were gathered from the research papers primarily found. The aim, objectives, expected outcomes, the design and the schedule of the research's activities as a whole were described.

3.2.3 Phase (Three): Literature review

After the approval of the proposal; a comprehensive literature review was conducted, to investigate previous studies in other communities. Studies from developed countries such as UK, USA, Japan, Finland, and also from developing countries such as China, South

Africa, Cyprus, Jordan, KSA ... etc were investigated. The literature review has contributed positively to the understanding of this research.

3.2.4 Phase (Four): Questionnaire structuring

One of the main outcomes of the literature review was the structuring of the questionnaire, and the general approach adopted in this research. During the questionnaire structuring, discussions with practitioners, shortenings, modifications and finalization for the questionnaire were performed.

3.2.5 Phase (Five): Pilot and main studies

After adopting the questionnaire, the pilot study was conducted as a first step prior to conducting the main study to investigate the relevance and reliability of the questionnaire.

3.2.6 Phase (Six): Summarizing results and recommendations

This phase contained arranging the statistical results, justification and model development. Finally, the conclusions considering the results and recommendations obtained were stated and the whole study was summarized.

The steps followed during the study were described in Figure 3.1.

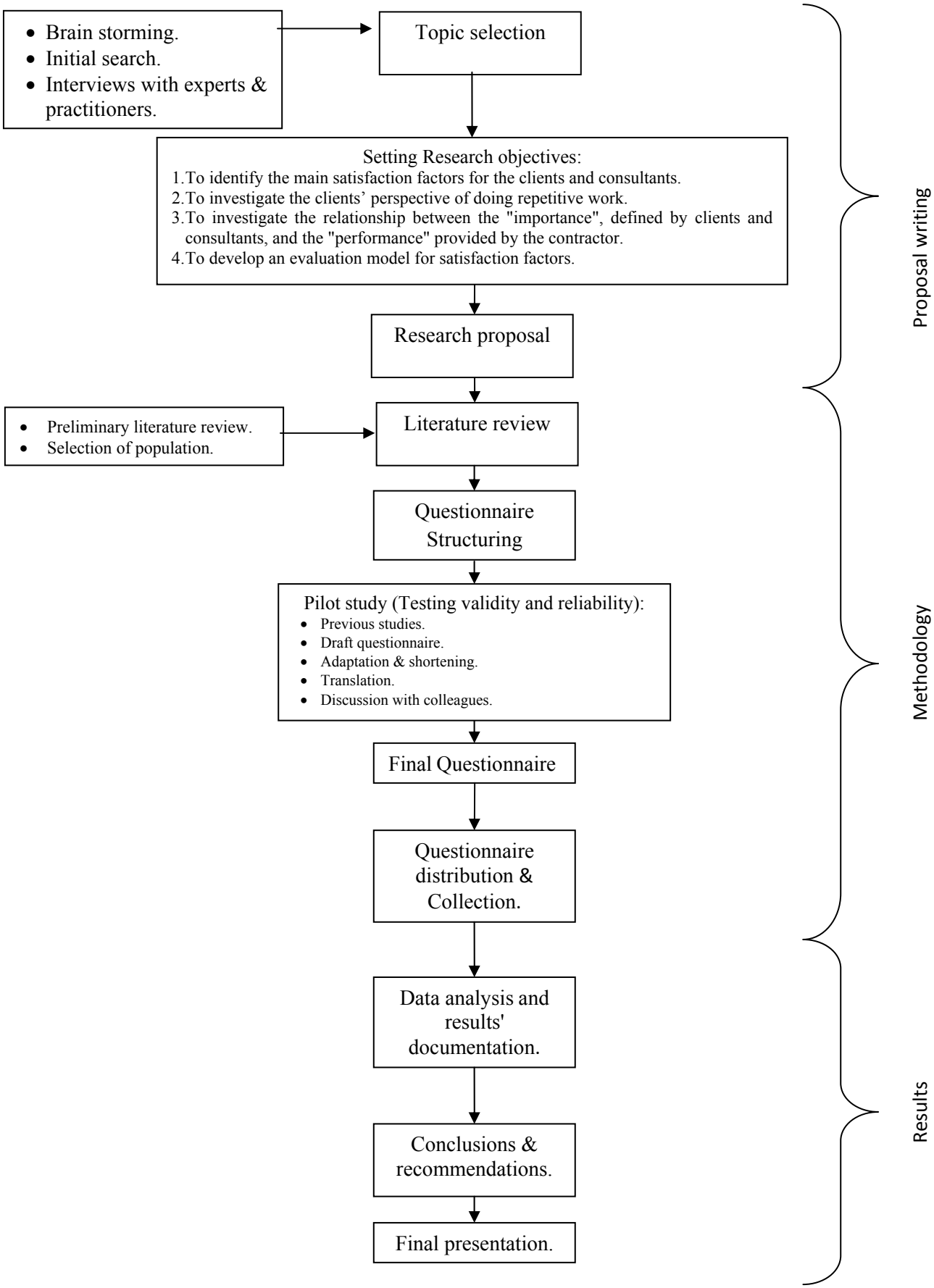


Figure 3.1: Research activities.

3.3 Identification of the main satisfaction factors

This section will discuss the factors of contractors' performance chosen by previous researchers according to the practices in their different communities and what could be adopted for this study to suit Gaza Strip. These studies considered the procurement of the construction works from different points of view. The first is a physical and the second is an aesthetic.

After studying a number of related research papers, e.g. Soetanto *et al*. (2001), Egemen and Mohamed (2005), Ahmed and Kangari (1995), Kärnä (2004) and Al Momany (2000), two main questions were evolved; the first question is "What factors do clients and consultants perceive as being the most important when dealing with contractor organizations in Gaza Strip?" and the second question was "How do clients and consultants perceive the performance of contractor organizations in these factors?" If these two questions were answered; a lot of issues will evolve for additional discussion.

It was found that categorization of the factors into main and sub groups were essential. The best categorization was mentioned by Soetanto *et al.,* (2001) in their study of achieving quality construction projects. The main eight categories and sub-factors were as shown in Table 3.1 (Soetanto *et al.,* 2001).

Table 3.1: Performance criteria [Soetanto et al., (2001)]

Pre-construction stage	***Variations, drawings and handing over***
First interview and presentation	Processing variations (e.g. speed, flexibility)
Ability and willingness to help develop brief	Preparation of shop drawings and as-built drawings
Contribution to design and buildability of project	Contribution to development of design drawings
Plan of work and method statement	Completion stage and ease of delivery
Understanding of contract and specifications	Completion of defects
	Smoothness of operation and hand-over
	Quality of hand-over documentation (O&M manual, H&S)
	Ease/speed of settlement of final account
	Ease of delivery (general feeling on how things went)
Construction	***Principal measures***
Site management	Adherence to schedule (time performance)
Site supervision and control	Adherence to budget (cost performance)
Site organization, tidiness and cleanliness	Quality of construction and workmanship
Ability to plan and programme properly	
Health and safety performance/management	
Compliance to regulations (CDM, etc.)	
Resource management	***Quality of service***
Material management	Handling of complaints (effectiveness)
Manpower management (quantity and quality of craft operatives)	Telephone inquiries and correspondence
Equipment and plant management	Speed and reliability of service
Management and co-ordination of subcontractors and suppliers	Responsiveness to client
Payment to subcontractors and suppliers (on time)	Ability to make rapid decisions
Strength of contractor site team (i.e. quantity)	Commitment of key persons (active and continuous)
Concern/awareness for environmental issues	Corporate hospitality
	Administration
Site personnel	***Attitude***
Co-operation with client (i.e. client representative)	Honesty and integrity
Individual performance and ability	Collaborative/spirit of co-operation/teamwork
Project manager performance and adequacy of authority	Customer focus/proactive to understand client/architect
Site manner (i.e. no loud noises and swearing)	Keep the client informed/sharing information with architect
	Communication (to coalition member and site personnel)
	Proactive attitude towards problems
	Avoidance of claims (not claims consciousness)
	Responsibility for their decision

These main and sub categories were developed and amended in the light of other studies, such as that of Ahmed and Kangari (1995) who structured a questionnaire to be used in his study and they are shown in Table 3.2.

Table 3.2: Performance criteria by [Ahmed and Kangari (1995)]

Timeliness	***Client orientation***
When requests for work are submitted, provide a reasonable estimate of work and when work will begin.	Display a courteous and helpful attitude.
Give the small jobs high priority.	Empathize with my problem, and treat it as an important request.
Plan and schedule job quickly.	Completely explain policies, procedures, and coordination requirements in advance.
Once a job started, complete it quickly.	Provide assistance and direction for completing paper work.
Respond immediately to work status inquiries.	
Maintain a sense of urgency.	
communications	***cost***
Provide periodic listings of all my work orders and their status.	Conduct value engineering to reduce cost.
Explain the proposed job prior to starting it.	Employ adequate cost-control measures to stay within budget.
Provide notifications and explanations for work delays.	Reduce wastes to a minimum.
Provide updates on work as it progresses.	Have adequate financing arrangements.
Explain what was done to solve a particular problem.	
Follow up to make sure that job was done satisfactorily.	
Response to complaints	***Quality***
Simplify procedures to lodge complaints.	Give top priority to the performance characteristics of the facility.
Offer personal attention to complaints.	Give equal performance to the secondary characteristics or features of the facility.
Offer reasonable explanation for complaints.	Efforts should be made by the contractor to meet or exceed all specifications or conformance requirements.
Treat complaints on completed jobs as priorities.	Ensure the durability of the completed facility as an integral part of contractor functions.
Respond quickly to legitimate complaints.	Give importance to aesthetics, such as how a product feels, sounds, and looks.
	Perceive quality as an essential dimension of overall client satisfaction.

Also, Kärnä (2004) listed a number of factors that he adopted in his study; these were as listed in Table 3.3.

Table 3.3: Satisfaction factors listed by Kärnä (2004).

Main Category	*Attributes*	
Quality assurance and handover	1.	Contracted work quality
	2.	Management and implementation of agreed quality assurance procedures
	3.	Workability of handover material and maintenance manual
	4.	Quality of assignment material and maintenance manual
	5.	Degree of completion at handover inspection
	6.	Repair of defects and deficiencies noticed during handover inspection
Environment and safety at work	7.	Cleanliness and order on site
	8.	Management of work safety on site
	9.	Management of environmental issues and related know how on site

Main Category	*Attributes*	
	10.	Tending to official obligations
Personnel	11.	Skill of supplier's work supervisors
	12.	Skill of supplier's workers
	13.	Commitment of supplier's employees to set goals
Co-operation	14.	Capacity of supplier's personnel for co-operation
	15.	Agreement about changes
	16.	Tending to notices of defect
	17.	Access of supplier's employees
	18.	Information flow on site
	19.	Quality of overall service level
Site supervision and subcontracting	20.	Conformity of supplier's subcontracting to contract
	21.	Adherence to schedule in accordance with common agreements
	22.	Tending to site supervision duties.

Finally, Egemen and Mohamed (2005) defined eighteen factors to be considered in their study of the clients' needs, wants and expectations; these factors were described in Table 3.4.

Table 3.4: Factors' adopted by (Egemen and Mohamed [2005])

1	Price that the contractor firm offers (compared to the client's estimate).
2	No. of years the contractor firm has been doing work in the market.
3	The image and identity of the contractor firm in the market.
4	Availability of previous experience with similar projects.
5	The product's place if chosen by the contractor.
6	Availability of highly qualified technical staff in the contractor firm.
7	References about the contractor.
8	Previous records of claims and disputes.
9	The contractor firm being a sectoral brand in the market.
10	Maximum resource and financial capacity.
11	Warranty conditions the contractor firm offers.
12	Type of plant and equipment available and suitability of the equipment.
13	Availability of highly qualified managerial staff in the contractor firm.
14	Contractor's familiarity with local suppliers, labor, subcontractors, etc.
15	Type of project control, monitoring process and cost control.
16	Proposed construction method.
17	Current workload of the contractor.
18	The contractor's approach to health and safety on the site.

The first draft prepared for the questionnaire was developed using (115) items, this draft was used in the arbitration, which was the first part of the questionnaire's pilot study. The professionals and practitioners investigated didn't have any additions to the content; due to the very high comprehensiveness of the prepared questionnaire. Their influence included re-distribution of some items and elimination of some repetitions of similar factors. This enabled modifying the number of items to the final number of (103) factors. The mentioned factors were collected in the final questionnaire as shown in Table 3.5.

Table 3.5: Distributing the factors adopted according to their references.

No.	Factor	Source				
		Soetanto et al., 2001	Ahmed and Kangari,1995	Kärnä, 2004	Egemen and Mohamed, 2005	Hinze, 1997
A. Pre-construction stage: (After Awarding)						
1	First interview and presentation of the implementation approach.	✓				
2	Ability and willingness to help develop the client brief of the project.	✓				
3	Contribution to design and buildability of project.	✓				
4	Plan of work and method statement.	✓				
5	Understanding of contract and specifications.	✓				
6	Completely explain administration policies, procedures and coordination requirements before commencement.		✓			
7	Providing a reasonable estimate of work and defining milestones, when requests for starting work are issued.		✓			
8	The price offered by the contractor's firm compared to the client's estimate).				✓	
9	Warranty conditions of the contractor firm offers.				✓	
B. Construction						
1	Managing the site through top management level.	✓				
2	Site supervision and control through supporting personnel level.	✓				
3	Site organization, tidiness and cleanliness.	✓				
4	Ability to plan and programme properly.	✓				
5	Compliance to local national regulations and guidelines.	✓				
6	Providing updates on work as it progresses and providing periodic listing of all work orders and their status.		✓			
7	Explaining what was done to solve a particular problem.		✓			
8	Project control, monitoring process and cost control.				✓	
9	Proposed construction method.				✓	
C. Principal Measures						
Adherence to schedule (***time*** performance).						
1	Give small jobs high priority.		✓			
2	Plan and schedule jobs quickly.		✓			
3	Once a job is started it is completed quickly.		✓			
4	Responding immediately to work status inquiries.		✓			
5	Maintaining sense of urgency.		✓			
6	Providing notifications and explanations for work delays.		✓			
7	Finishing the project on time.	✓				
Adherence to budget (***cost*** performance).						
1	Conducting value engineering to reduce costs optimizing the available feasible alternatives.		✓			
2	Employing adequate cost control measures to stay within budget.		✓			

Table 3.5: Distributing the factors adopted according to their references.

No.	Factor	Source				
		Soetanto et al., 2001	Ahmed and Kangari,1995	Kärnä, 2004	Egemen and Mohamed, 2005	Hinze, 1997
3	Reducing wastes to a minimum.		✓			
4	Having adequate financing arrangements.		✓			
5	Finishing project within budget.	✓				
Quality of construction and workmanship.						
1	Giving top priority to the performance (operational) characteristics of the facility.		✓			
2	Giving equal performance to the secondary characteristics of features of the facility.		✓			
3	Making efforts by the contractor to meet or exceed all specifications or conformance requirements. (Outstanding care about details)		✓			
4	Ensuring the durability of the completed facility as an integral part of contractor functions. (Innovation through new ideas or technologies)		✓			
5	Giving importance to aesthetics, such as how the output feels, sounds and looks.		✓			
6	Perceiving quality as an essential dimension of overall client satisfaction.		✓			
7	Applying quality assurance procedures.	✓				
Safety measures and standards.						
1	Personal protection equipment.					✓
2	Availability of first aid supplies.					✓
3	Availability of safety training for the job site personnel.					✓
4	Regular meetings with the site personnel to insure safety awareness within the staff.					✓
5	Commitment of the top management with the safety policies and regulations.					✓
6	Accidents' investigation and documentation in the site.					✓
7	Availability of safety director.					✓
8	Availability of safety plan.					✓
9	Compliance with local safety regulations.					✓
D. Resources management						
1	Material management.	✓				
2	Manpower management (quantity and quality of craft operatives).	✓				
3	Equipment and plant management.	✓				
4	Management and co-ordination of subcontractors and suppliers.	✓				
5	Payment to subcontractors and suppliers (on time).	✓				
6	Strength of contractor site team (i.e. quantity).	✓				
7	Concern/awareness for environmental issues.	✓				
8	Maximum resources and financial capabilities.				✓	
9	Type of plant and equipment available and suitability of the equipment.				✓	

Table 3.5: Distributing the factors adopted according to their references.

No.	Factor	Source				
		Soetanto et al., 2001	Ahmed and Kangari,1995	Kärnä, 2004	Egemen and Mohamed, 2005	Hinze, 1997
10	Contractor's familiarity with local suppliers, labors, etc.				✓	
E. Site personnel						
1	Co-operation with client (i.e. client representative).	✓				
2	Individuals' performance and abilities.	✓				
3	Project manager performance and adequacy of authority.	✓				
4	Site manner (i.e. no loud noises and swearing).	✓				
5	Availability of highly qualified technical staff in the contractor's firm.				✓	
6	Availability of highly qualified managerial staff in the contractor firm.				✓	
7	Skills of the contractor's work supervisors.			✓		
8	Skills of the contractor's workers.			✓		
9	Commitment of the contractor's employee to set goals.			✓		
10	Capacity of contractor's workers for cooperation.			✓		
11	Commitment of contractor's subcontractors.			✓		
F. Variations, drawings and handing over						
1	Agreement about changes and processing variations with speed and flexibility.			✓		
2	Processing variations (e.g. speed, flexibility).	✓				
3	Preparation of shop drawings and as-built drawings.	✓				
4	Contribution to development of design drawings.	✓				
5	Completion stage, finishing and ease of handing over and settlement of final account.	✓				
6	Completion of defects. (speed and quality)	✓				
7	Smoothness of operation and hand-over.	✓				
8	Quality of hand-over documentation (O&M manual, H&S).	✓				
G. Quality of service						
1	Handling of complaints (effectiveness).	✓				
2	Telephone inquiries and correspondence.	✓				
3	Speed and reliability of service.	✓				
4	Responsiveness to client.	✓				
5	Ability to make rapid decisions.	✓				
6	Commitment of key persons (active and continuous).	✓				
7	Corporate hospitality and generosity in dealing with the client and his representatives.	✓				
8	Administration.	✓				
9	Deep involvement in the problems and treating them as important request.		✓			

Table 3.5: Distributing the factors adopted according to their references.

No.	Factor	Source				
		Soetanto et al., 2001	Ahmed and Kangari,1995	Kärnä, 2004	Egemen and Mohamed, 2005	Hinze, 1997
10	Providing assistance and direction for completing paperwork.		✓			
11	Repairing of defects and deficiencies noticed during handover inspection.			✓		
12	Information flow in the site.			✓		
13	Access of contractor's employee.			✓		
H. Attitude						
1	Honesty and integrity.	✓				
2	Collaborative/spirit of co-operation/teamwork.	✓				
3	Customer focus/proactive to understand client/architect.	✓				
4	Keep the client informed/sharing information with architect.	✓				
5	Communication (to coalition member and site personnel).	✓				
6	Proactive attitude towards problems.	✓				
7	Avoidance of claims (not claims consciousness).	✓				
8	Responsibility for their decision.	✓				
9	Display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives.		✓			
10	Simplifying procedures to either avoid or overcome complaints.		✓			
11	Offering personal attentions to complaints.		✓			
12	Offering reasonable explanation for complaints.		✓			
13	Treating complaints on completed jobs as priorities.		✓			
14	Responding quickly to legitimate complaints.		✓			
15	Working in harmony with consultant firm.				✓	

These satisfaction statements were discussed with the supervisor, professional practitioners and colleagues in the field of construction industry, and any vague expressions and concepts were explained to be reasonable and understandable. After that, the whole items were translated into Arabic Language to suit the local community and the developed questionnaire is shown in Annex No. (1) in both languages (English and Arabic).

3.4 Questionnaire structuring and data measurement

In the research related to construction management, structured questionnaires are highly preferable. This was concluded through studying a number of previous researches, (e.g. Soetanto *et al.* (2001), Al Momany (2000), and Egemen *et al.* (2005)). Those writers structured their questionnaires based on their investigated subjects and the data required to suit the purpose of the research. The adopted approach in filling the questionnaire was to consider each factor within its group without relating each factor to the other factors in other groups. This was due to the large number of factors identified, and the mentioned writers adopted overall ranking for their factors because they adopted a smaller number of factors. In this research the questionnaire was chosen to contain three main categories of information, these are discussed in detail in the following sections. (Soetanto *et al.* (2001), Al Momany (2000) and Egemen *et al.* (2005))

3.4.1 General information

This part of the questionnaire was structured to investigate the different characteristics of the respondents to the questionnaire. The main characteristics were: 1) the experience of the respondent, 2) the type of implemented projects through the organization, 3) the average value for the implemented projects through the organization in the past five years and 4) the occupation or position of the respondent within the organization.

3.4.2 Satisfaction criteria

As discussed before in section (3.4), the questionnaire's satisfaction criteria or statements were divided into eight main groups, these are: (Soetanto *et al.* (2001))

1. Preconstruction stage.
2. Construction stage.
3. Principal measures.
4. Resources' management.
5. Site personnel.
6. Variations, drawings and handing over.
7. Quality of service.
8. Attitude.

The respondents, either clients or consultants, were asked to indicate the importance from his point of view and his perception for the level of performance of contractors for each factor, based on Likert scale from 1 - 5. This was clearly clarified to the respondents in the questionnaire. It was expected, through this section, to find out two main issues. The

first was the importance of each factor from the point of view of the client or consultant. The second is the level of performance provided by contractors in the local market. This was based on the research conducted by Soetanto *et al.* (2001).

3.4.3 Satisfaction and repetitive work

This section of the questionnaire will investigate the opinion of the clients and consultants regarding the relationship between the level of satisfaction and performance provided, and the chance of repetitive work with the same contractor. The following four questions were derived through investigating the studies of: (Kärnä (2004), Egemen and Mohamed (2005), Al Momani (2000) and Maloney (2002)):

1. "The local contractors care to achieve the client's and consultant's satisfaction through outstanding performance". What is your opinion?
2. "The contractors' care to achieve the client's and consultant's satisfaction influences the performance level of the contractor". What is your opinion?
3. "The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence their choice when the contractor is bidding or applying for new work". What is your opinion?
4. "The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence the possibility of existence of long term cooperation and an opportunity for repetitive work with that client". What is your opinion?

3.5 Research population

This research targeted the public clients and consultants as the representative of the owner. The targeted persons were practitioners, consultants and professionals working within local ministries, municipalities, governmental bodies and consulting offices. The type of project was not limited and organizations with large amount of work in the field were mostly approached, and highly experienced personnel were selected to fill the questionnaire.

3.5.1 Sample size

As mentioned before in previous sections, the targeted group was public clients, implementing public projects in the local field of construction industry, and at the same time the largest and the most experienced consulting firms were also approached. The selection was divided into two categories:

A. Consultants:
    1. The total number of consulting firms were obtained form the Board of Engineering Offices and Consulting Firms, and it was (48) consulting firms.
    2. Only (12) consulting firms were approached; based on the recommendation of the board of Engineering Offices and Companies. That is, those (12) offices were approached by public clients for consultancy services.
    3. Only (10) offices responded, with a total number of (21) respondent (i.e. engineer), and one questionnaire was rejected. The whole number of valid responses were (20) questionnaires as shown in Table 6. All of these offices were classified as consulting offices under the category of construction management, and they were recommended by the Board of Engineering Offices and consulting firms.

B. Clients:

    The clients implementing and managing public projects were targeted through this research. Ministries, municipalities and donors were targeted through this research. But it was found that there were specified organizations that were worth to be investigated than the others. The steps followed to investigate this sector were:

    1. It was so hard to define a specific number of clients in Gaza Strip. About approximately 1,200 Palestinian NGOs and 200 foreign NGOs operating in the West Bank and Gaza (Tabar, 2000), about (50) governmental bodies (22) ministries of them involved in construction sector and about (25) municipalities as listed by The General Personnel Council in (2006).
    2. Only clients implementing public projects were approached. These organizations were recommended by professionals and practitioners.
    3. According to the size of organization and depending on the amount of projects implemented, the persons approached to fill the questionnaire were selected.

4. A number of ministries, municipalities, governmental bodies and donors were approached, taking into consideration the distribution throughout Gaza Strip to represent the local industry.

Table 3.6 illustrates the classification of the sample size:

Table 3.6: Classification of sample size.

Title	Number of population		Number of sample		Number of respondents		Number of valid respondents (Persons)
	offices	persons	offices	persons	offices	persons	
Consultants	48	252	12	30	10	21	20
Clients			80		72		71
Total							91

3.5.2 Sample characteristics

Table 3.7 illustrates that 78% from the sample were public clients and 22% were consultants. The public clients were chosen to be those who were implementing most of public projects in Gaza Strip. Some of these institutions were: Ministry of local Government, Ministry of Finance, Ministry of Awqaf and Religious Affairs, Ministry of Education and High Education (MEHE), Palestinian Economic Council for development & Reconstruction (PECDAR), United Nations Development Programme (UNDP), United Nations (UN), Ministry of Public Works and Housing, Ministry of Health (MOH), Municipality of Gaza (MOG), Municipality of Khan Younis, Municipality of Rafah, some Middle area municipalities, and some northern area municipalities. More than one person were approached within each of the mentioned institutions, when possible, to obtain data based on cumulative experience and in different areas of Gaza Strip reaching (71) persons.

In the case of consultants, and after contacting the head of the board of Engineering Offices and Consulting Firms in the Engineers' Syndicate in addition to interviewing professionals and practitioners in the local field of construction industry, twelve consulting offices were selected out of 48 consulting firms in Gaza strip. This recommendation was based on the fact that these firms are the main players in public consultancy services in Gaza Strip and all of them were located in Gaza Strip. Also, more than one engineer was approached in each of those firms. A total number of (20) valid

respondent was achieved. The characteristics of the (91) valid responses were illustrated in Table 3.7:

Table 3.7: Participants' Categorization.

Distribution of respondents			
No.	***Clients***	***# of respondents***	***Percentage***
1	SMDM.	1	**78**
2	Municipality of Gaza.	12	
3	Rafah Governorate.	1	
4	Islamic Relief.	1	
5	Rafah Municipality.	3	
6	Khanyounis Municipality.	3	
7	Islamic University of Gaza.	3	
8	PIEFZA – Industrial Zone.	2	
9	Ministry of Local Government.	4	
10	Ministry of Education and Higher Education.	4	
11	PECDAR.	3	
12	United Nations.	8	
13	Ministry of Finance.	2	
14	Ministry of Housing.	7	
15	Ministry of Health.	3	
16	Ministry of Awqaf and Religious Affairs	1	
17	Middle Area Municipalities.	7	
18	United Nations Development Programme – UNDP.	2	
19	NDC – Non-governmental Organizations Development Center.	2	
20	Palestinian Council of Housing.	1	
21	Palestinian Economical Development - PED.	1	
Total number of clients		**71**	
No.	***Consultant***	***# of respondents***	
1	TECC – Technical Engineering Consulting Company.	2	**22**
2	UG – Universal Group.	4	
3	*Enfra* Consultants.	1	
4	UCI – Union Construction and Investment Corporation.	1	
5	Hi Line Consulting Office.	1	
6	EMCC – Engineering and Management Consulting Center.	4	
7	Dar Al Handasa Engineering Office.	2	
8	Al-Zahra'a Consulting Office	1	
9	Abu Shahla & Associates – Architects and Engineers.	2	
10	Home Engineering Office.	2	
	Total number of consultants	**20**	
	Grand total	**91**	**100**

a. Table 3.8 illustrates the percent of the different experience levels for the respondents. It illustrates that about 32% of clients' respondents and 10% of the consultants' respondents held 6 – 10 years of experience. About 28% of the clients' respondents and about 40% of the consultants' respondents held 11 – 20 years of experience. The table also illustrates that about 20% of the clients' respondents and 35% of the consultants' respondents held more than 20 years of experience. The rest of the respondents held less than 5 years of experience.

Table 3.8: Percent of the different experience levels for the respondents.

Experience	Clients		Consultants	
	Frequency	Percentage	Frequency	Percentage
Less than 5 years	14	19.7	3	15
6-10 years	23	32.4	2	10
11-20 years	20	28.1	8	40
More than 20 years	14	19.8	7	35
Total	71	100	20	100

b. Table 3.9 illustrates the categorization of the projects implemented by the approached personnel in the different institutions under consideration. The table illustrates that about 29% of the clients' respondents and about 24% of the consultants' respondents implemented public buildings projects. About 23% of the clients' respondents and about 19% of the consultants' respondents implemented water and wastewater projects. About 21% of the clients' respondents and about 24% of the consultants' respondents implemented roads and infrastructure projects. The rest were distributed between Housing, private buildings and other types buildings.

Table 3.9: Percent of each category of implemented projects.

Implemented projects	Clients		Consultants	
	Frequency	Percentage	Frequency	Percentage
Housing	27	13.8	10	13.9
Public building	56	28.7	17	23.6
Roads & infrastructure	41	21.0	17	23.6
Water & wastewater	44	22.6	14	19.4
Private buildings	23	11.8	10	13.9
Other, Please Specify	4	2.10	4	5.6
Total	195	100	72	100

c. Table 3.10 illustrates the cumulative budget for the implemented projects within the last five years by the respondents' organization or firm. There were about 69% of the clients' respondents and 60% of the consultants' respondents implemented projects with an amount over 5 million dollars. About 17% of the clients and 15% of the consultants implemented projects with an amount between 3 and 5 million dollars. The rest implemented projects with values less than 3Million Dollars in the past five years.

Table 3.10: The average annual value for the implemented projects. (Where M=Million in $)

The average annual value for the implemented projects	Clients		Consultants	
	Frequency	Percentage	Frequency	Percentage
Less than 0.5M	2	2.8	0	0
0.5M – 0.99M	1	1.4	2	10
1 M – 2.99M	7	9.9	3	15
3 M – 4.99 M	12	16.9	3	15
More than 5 M	49	69	12	60
Total	**71**	**100**	**20**	**100**

d. Table 3.11 illustrates the percent of different occupations or position of the respondents in their organizations. The obtained data showed that about 38% of the clients' respondents and about 35% of the consultants' respondents were project managers. About 15% of clients' respondents and 20% of the consultants' respondents were construction supervisors. The rst were distributed between head of department, office engineers, procurement specialists and other positions.

Table 3.11: Occupation/position in organization.

Occupation/position in organization	Clients		Consultants	
	Frequency	Percentage	Frequency	Percentage
Project Manager	27	38	7	35
Construction Supervisor	15	21.1	4	20
Head of Department	8	11.3	4	20
Office Engineer	6	8.5	2	10
Procurement Specialist	5	7.0	1	5
Other, Please Specify	10	14.1	2	10
Total	71	100	20	100

The above data indicates that the approached personnel were highly experienced and involved continuously in a large number of projects in different sectors of construction industry in Gaza Strip.

3.6 Data Measurement and analysis

In order to be able to select the appropriate method of analysis, the level of measurement must be understood. For each type of measurement, there is an appropriate method that can be applied and not others. In this research, interval scale method was used.

3.6.1 One-Sample Kolmogorov-Smirnov Test (Normality distribution test)

Kolmogorove - Smirnov test was used to identify if the data follow normal distribution or not, this test is considered necessary in testing hypotheses as most parametric tests stipulate data to be normally distributed. The test results, as shown in Table 3.12, clarifies that the significance levels calculated are greater than 0.05 (sig. > 0.05), this in turn denotes that data follows normal distribution, and so parametric test must be used.

Table 3.12: One - Sample Kolmogorov-Smirnov Test.

Section		contents	Kolmogorov-Smirnov Z	P-value
Part Two	A	Pre-construction stage: (After Awarding)	0.894	0.401
	B	Construction Stage	1.068	0.204
	C - Principal Measures	Adherence to schedule (time performance)	1.014	0.256
		Adherence to budget (cost performance)	1.284	0.074
		Quality of construction and workmanship	1.021	0.248
		Safety measures and standards	0.840	0.481
	D	Resources management	0.786	0.567
	F	Site personnel	0.875	0.428
	E	Variations, drawings and handing over	0.955	0.321
	G	Quality of service	0.860	0.451
	H	Attitude	1.011	0.259
Part Three		Client's and consultant's satisfaction and repetitive work with contractors	0.786	0.567

3.6.2 Results and analysis

The targeted persons were asked to provide their opinions on the clients' needs and satisfaction in the construction industry in Gaza Strip by scores from 1 to 5, where the *Importance* column aims to measure the importance of the different factors listed with respect to the clients' and consultants' point of view. This measurement is based on a 1 – 5 scale. Where (1) means "Totally not important" and (5) means "Totally important", and the *Performance* column aims to measure the contractors' *performance* in the different factors listed according to the clients' and consultants' perceptions. This measurement is based on a 1 – 5 scale, where (1) means "very unsatisfied" and (5) means "very satisfied". This is based on Likert scale shown below:

Importance (Ideal)	Item	Totally Not Important	Not Important	Average	Important	Totally Important
	Scale	1	2	3	4	5

Performance (based on previous experience)	Item	Very unsatisfied	unsatisfied	Average	satisfied	Very satisfied
	Scale	1	2	3	4	5

To determine the relative ranking of the factors, these scores were then transformed to importance indices based on the formula:

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

Where *W* is the weighting given to each factor by the respondent, ranging from 1 to 5, (n_1 = number of respondents for very unsatisfied ... n_5 = number of respondents for very satisfied). *A* is the highest weight (i.e. 5 in the study) and *N* is the total number of samples. The relative importance index ranges from 0 to 1. (Tam and Le, 2006)

To achieve the research goal, the Statistical Package for the Social Science (SPSS) was used for analyzing the data. The following statistical analyses were used**:**

1- Frequencies and Percentile.
2- Alpha-Cronbach Test for measuring reliability of the items of the questionnaires.
3- Person correlation coefficients for measuring validity of the items of the questionnaires with respect to each other.
4- Spearman – Brown Coefficient was used for correcting the Person correlation coefficients to assist testing the validity.
5- One-Sample Kolmogorov-Smirnov Test was used to identify whether the data followed normal distribution or not.
6- Relative Importance Index.

7- Independent sample t-test was used to check if there are any significant differences in point of view of the respondents regarding the satisfaction statements.
8- One way – ANOVA Test was used for testing the variance between the different groups of satisfaction factors, and the main categories of experience and positions within the respondent's organization or firm.

The results were discussed depending on three main criteria for analyzing them. **The first** criterion was that, the client or the consultant is considered satisfied if the level of implied *importance* by the respondent for the satisfaction statement was ***equal*** to the level of *performance* provided by local contractors. In this case the respondent, either the client or the consultant, is considered optimally satisfied. **The second** criterion was that if the level of contractors' *performance* perceived by the client or the consultant was ***less*** than the implied *importance* for the satisfaction statement, then the respondent is considered dissatisfied. Finally, **the third** criterion was that if the level of contractors' *performance* perceived by the client or the consultant was ***more*** than the implied *importance* for the satisfaction statement, then the respondent is considered overly satisfied and the contractor will be wasting his effort. This concept was mentioned in the study by Soetanto *et al.* (2001) in The UK.

3.7 Validation Methodology

The questionnaire was used as a tool to collect primary data related directly to this study. The questionnaire was divided into three categories of information. The First was general information regarding the person filling the questionnaire and his organization. The second contained the different categories and sub-categories of satisfaction statements and factors to measure their relation to each other, and to investigate the importance of each factor and the level of satisfaction provided by contactors in each factor and each category. The last category of information investigated the effect of the level of client satisfaction in the local construction industry on the approach of doing repetitive work with the same contractor in the future**.** The content validity and reliability of the questionnaire was assessed by two ways which were as follows:

3.7.1 Arbitrating the questionnaire

The questionnaire was distributed to a group of 8 persons; two of them were academic members, four of them were highly experienced public clients representatives from different organizations, and the last two were consultants with more than 10 years of experience. The content was modified, and the necessary parts of the questionnaire were added in response to the group's suggestions, the parts were accepted if 6-8 of arbitrators agreed with, and have modified if 3-5 of arbitrators agreed with, and rejected if less than 3 of arbitrators agreed with, and the questionnaire appeared as in Annex No. 1.

3.7.2 Pilot study

After the preliminary testing, a pilot study was conducted to evaluate the questionnaire; the questionnaire was distributed to a sample of (29) persons. This group contained a representative sample of clients and consultants, (21) of them were clients and (8) of them were consultants. The respondents had no difficulty in understanding the items or the instructions to complete the questionnaire. The internal consistency of the questionnaires was tested by calculating the correlation coefficients between each item and the related items' field.

3.7.3 Questionnaire validity

Validity refers to the degree to which an instrument measures what is supposed to be measuring. It is important to consider that a measuring device which is not reliable cannot possibly be valid. (Polit and Hungler, 1978)

Two parts of the questionnaire were considered in testing questionnaire validity. Part one was "Satisfaction Criteria" and the other part was "Satisfaction and Repetitive Work" were considered. It was found that the correlation coefficients between each item within each group, and the average of the related group denoted significance at the level 0.05. That means a content validity of this group of the questionnaire for measuring, either the importance/performance of items or the concept of repetitive work items. The results of that stage are shown in Annex No. 2.

3.7.4 Questionnaire Reliability

The reliability of a measuring instrument is a major criterion for assessing its quality and adequacy. The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability. Reliability can be equated with the stability, consistency, or dependability of a measuring tool. The test must be repeated to the same sample of people on two occasions and then compares the scores obtained by computing a reliability coefficient (Polit and Hungler, 1978)

It was difficult to return the scouting sample of the questionnaire that is used to measure the questionnaire reliability to the same respondents due to the different work conditions to this sample. Therefore two tests can be applied to the scouting sample in order to measure the reliability of the questionnaire. The first test is the Half Split Method and the second is Cronbach's Coefficient Alpha.

3.7.4.1 Split-Half Coefficient Method:

This method depends on finding Pearson correlation coefficient between the means of odd questions and even questions of each field of the questionnaire. Then, correcting the Pearson correlation coefficients can be done by using Spearman Brown correlation coefficient of correction. The corrected correlation coefficient (consistency coefficient) is computed according to the following equation:

Consistency coefficient = $\frac{2r}{1+r}$ (where r is the Pearson correlation coefficient.)

$$r = \frac{k}{k-1}\left[1 - \frac{\sum \sigma_i^2}{\sigma_y^2}\right] \qquad where:$$

K = the total number of items.

σ_i^2 = the variance of each item.

σ_y^2 = the variance of the total test.

The normal range of corrected correlation coefficient $\frac{2r}{1+r}$ is between 0.0 and + 1.0 As shown in Table 3.13, all the corrected correlation coefficients values are between 0.0 and +1.0 and the significant (α) is less than 0.05 so all the corrected correlation coefficients are significance at α = 0.05. It can be said that according to the Half Split method, the groups of satisfaction statements are reliable.

Table 3.13: Testing reliability using Split-Half Coefficient method.

section			contents	Importance (Ideal)			Performance (based on previous experience)		
				Pearson – coefficient	Spearman-Brown Coefficient	p- value	Pearson – coefficient	Spearman-Brown Coefficient	p- value
Part Two	A		Pre-construction stage: (After Awarding)	0.7462	0.854656	0.000	0.7646	0.866599	0.000
	B		Construction	0.8190	0.900495	0.000	0.8352	0.910201	0.000
	C	Principal Measures	Adherence to schedule (*time* performance	0.8266	0.90507	0.000	0.7543	0.859944	0.000
			Adherence to budget (*cost* performance).	0.6549	0.791468	0.000	0.7528	0.858969	0.000
			Quality of construction and workmanship	0.6498	0.787732	0.000	0.8583	0.923748	0.000
			Safety measures and standards	0.6676	0.800672	0.000	0.9112	0.953537	0.000
	D		Resources management	0.6946	0.81978	0.000	0.6748	0.805828	0.000
	E		Site personnel	0.7675	0.868458	0.000	0.8181	0.89995	0.000
	F		Variations, drawings and handing over	0.8220	0.902305	0.000	0.6285	0.771876	0.000
	G		Quality of service	0.8284	0.906147	0.000	0.8675	0.92905	0.000
	H		Attitude	0.9007	0.947756	0.000	0.9173	0.956866	0.000
Part Three			Client's and consultant's satisfaction and repetitive work with contractors	0.6247	0.769004	0.000	0.7105	0.830751	0.000

3.7.4.2Cronbach's Alpha

Coefficient Alpha or (Cronbach's Alpha) method is one of the most widely used methods for measuring reliability. Cornbach's Alpha is preferable to the split-half procedure because it supports correlation for all possible ways of dividing the measure into two halves. (Polit and Hungler, 1978)

This method is used to measure the reliability of the questionnaire between each field and the mean of the whole fields of the questionnaire. The normal range of Cronbach's coefficient alpha value between 0.0 and + 1.0, and the higher values reflects a higher

degree of internal consistency. As shown in Table 3.14, the Cronbach's coefficient alpha was calculated for the satisfaction statements and the results were in the range from 0.7797 to 0.9326 in the case of importance, and from 0.8090 and 0.9549 in the case of performance. This range is considered high; the result ensures that the questionnaire is reliable.

Table 3.14: Testing reliability using The Cronbach's Alpha.

Section		contents	Importance (Ideal)	Performance (based on previous experience)
			Cronbach's Alpha	Cronbach's Alpha
A		Pre-construction stage: (After Awarding)	0.8220	0.8353
B		Construction	0.8310	0.9121
C	Principal Measures	Adherence to schedule (time performance)	0.8014	0.8090
		Adherence to budget (cost performance)	0.8202	0.8940
		Quality of construction and workmanship	0.7797	0.8948
		Safety measures and standards	0.9021	0.9523
D		Resources management	0.8821	0.9003
F		Site personnel	0.8436	0.8954
E		Variations, drawings and handing over	0.8975	0.8965
G		Quality of service	0.9061	0.9210
H		Attitude	0.9326	0.9549
I		Client's and consultant's satisfaction and repetitive work with contractors	0.8542	0.8354

Chapter 4: Data Analysis and Discussion

4.1 Introduction

This chapter will discuss the outcomes of the comprehensive field study. The discussion will include comparison between the levels of *importance* and the levels of *performance* perceived by both clients and consultants. Following, comparison will be made between the perceptions of clients and consultants through correlation test. The effect of experience and position of the respondents will be discussed. Finally, a framework will describe the proposed improvement and evaluation methodologies. Figure 4.1 describes the adopted approach in discussing the results.

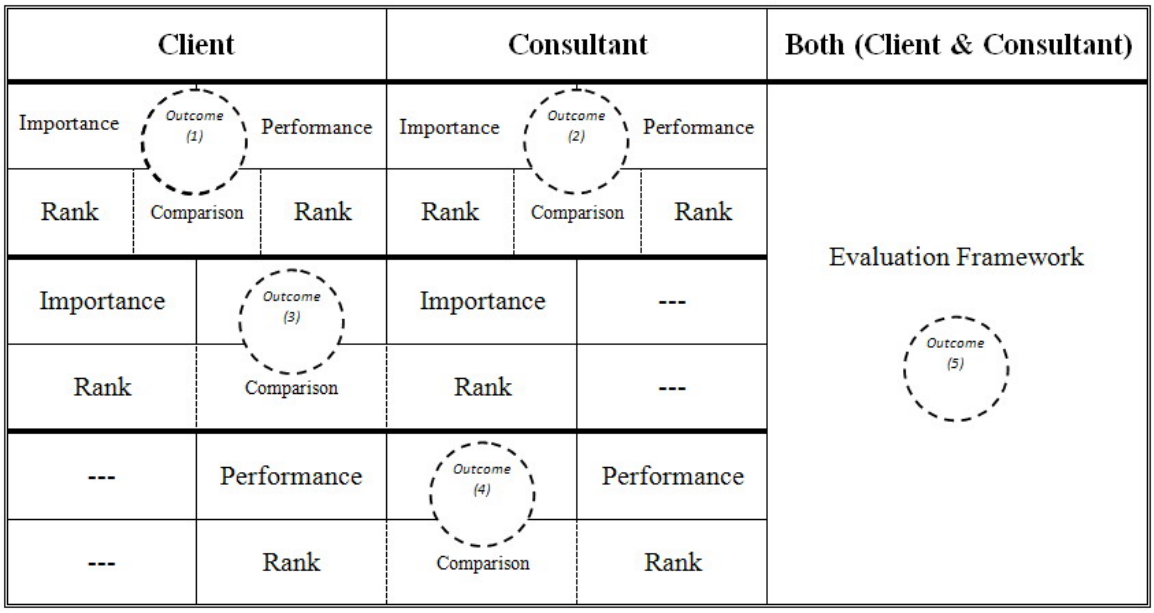


Figure 4.1: Discussion approach.

4.2 Satisfaction criteria

This section contains eight main groups, these groups are: pre-construction stage, construction stage, principal measures, resources management, site personnel, variations, drawings and handing over, quality of service and attitude. Each group contains a number of satisfaction statements. The third group "the principal measures" contains four sub-groups, these sub-groups are: time, cost, quality, and safety. This section will discuss the difference between perceptions of clients and consultants. Each of the following sub-sections will discuss one of the previously mentioned groups.

The results were discussed depending on three main criteria for analyzing them. **The first** criterion was that, the client or the consultant is considered satisfied if the level of implied *importance* by the respondent for the satisfaction statement was ***equal*** to the level of *performance* provided by local contractors. In this case the respondent, either the client or the consultant, is considered optimally satisfied.

The second criterion was that if the level of contractors' *performance* perceived by the client or the consultant was ***less*** than the implied *importance* for the satisfaction statement, then the respondent is considered dissatisfied.

Finally, **the third** criterion was that if the level of contractors' *performance* perceived by the client or the consultant was ***more*** than the implied *importance* for the satisfaction statement, then the respondent is considered overly satisfied and the contractor will be wasting his effort.

4.2.1 Group 1: Pre-construction stage

This group considers nine factors in the group of preconstruction stage. It discusses the implied *importance* and the satisfaction with the provided *performance* of the satisfaction factors in the preconstruction stage. This is based on the perception of clients and consultants regarding the listed factors. In section 4.2.1.1, the perception of the clients will be discussed. In section 4.2.1.2, the perception of consultants will be discussed. In section 4.2.1.3 a summary will discuss the differences between clients' and consultants' perceptions.

4.2.1.1 Clients' perception regarding the satisfaction factors in the preconstruction stage

Table 4.1 illustrates the ranking of the satisfaction factors in the group of preconstruction stage, according to their relative importance indices. It also illustrates the ranking of the same factors based on the clients' satisfaction with the *performance* by local contractors.

"Understanding of contract documents and specifications" was ranked the first factor by the clients' respondents as the most important factor in the pre-construction stage, with RII = 0.930. Clients considered this factor very important because it will decrease the opportunity of conflicts during implementation. Better understanding of contract and specifications will guarantee that the outcome will meet most of the clients' requirements and expectations, which is one of the basic satisfaction requirements in the field of construction. This factor was ranked the first by clients regarding *performance*, with RII

= 0.707. This indicates that clients perceived that contractors didn't totally satisfy their expectations. This value is significantly less than the RII regarding the *importance* of understanding the contract and specifications which was RII = 0.930. This indicates that the *performance* in understanding the contract and specifications was less than the clients' expectations. This also indicates that the contractors need to enhance their abilities with respect to understanding contract and specifications.

Similarly, in The UK "understanding the contract documents and specifications" was ranked second regarding *importance*, and first regarding *performance* within this group by Soetanto *et al.* (2001). In Kuwait, it was found that pre-tender meetings lead to clarification of doubts and ambiguities in tender documents, resulting in a more accurate set of tender documents. They also found that it is of great importance to ensure that bidders understand the scope of the work, the design, technical requirements and other contractual terms and conditions very well. This will minimize future complaints and claims during construction. (Al-Reshaid and Kartam, 2005)

Table 4.1: Clients' perception regarding importance and performance in pre construction stage

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Understanding of contract and specifications.	0.930	1	0.707	1
Plan of work and method statement.	0.899	2	0.687	4
Ability and willingness to help develop the client brief of the project.	0.862	3	0.707	1
The price offered by the contractor's firm compared to the client's estimate).	0.860	4	0.597	9
Providing a reasonable estimate of work and defining milestones, when requests for starting work are issued.	0.859	5	0.639	7
First interview and presentation of the implementation approach.	0.839	6	0.684	5
Warranty conditions of the contractor firm offers.	0.834	7	0.707	1
Contribution to design and buildability of project.	0.786	8	0.681	6
Completely explain administration policies, procedures and coordination requirements before commencement.	0.763	9	0.612	8
Average	0.848		0.67	

The factor "plan of work and method statement" was ranked the second regarding *importance* by clients' respondents, with RII = 0.899. The work plan and method statement are prepared by the contractors during the mobilization period of the project. These documents tell the client about the contractors' schedule, preparedness for starting the implementation, technical abilities and financial abilities. "Plan of work and method statement" was ranked the fourth factor by clients' respondents, with respect to the provided *performance*, with RII = 0.687. This is significantly less than the RII in the case of implied *importance*, which was RII = 0.899. This means that contractors are not preparing sufficient plan of work and method statement before commencement. Preparing these documents became a contractual obligation that is usually irrelative to the real situation and circumstances of the project. This indicates that additional effort must be exerted in preparing the plan of work and method statement by contractors in construction projects. This factor was ranked the first in the preconstruction stage in the study of Soetanto *et al.* (2001). This is very similar to the results obtained in our research. The *performance* didn't meet the clients' expectations in UK because this factor was ranked fourth in the same study of Soetanto *et al.* (2001).

The clients' respondents ranked the "ability and willingness to help develop the client brief of the project" the third factor regarding *importance*, with RII = 0.862. This factor was considered important; because clients prefer that contractors should participate in developing client brief in early stages. This may decrease the probability of conflicts in the future. The contractor, as the implementing party, can positively influence the design and specifications according to his knowledge and experience. The client can make use of the contractors' participation in developing the client brief for the benefit of the project. This factor was ranked the first regarding *performance* provided by contractors' in developing client brief, with RII = 0.707. This is the same as the RII of "understanding of contract and specification". This means that the *performance* regarding this factor requires enhancement by contractors. Clients are requested to change their procedures in the design and bidding/awarding processes, and contractors are requested to provide willingness to participate in the design process.

The fourth *important* factor ranked by clients was "the price offered by the contractor's firm compared to the client's estimate", with RII = 0.860. This indicates the *importance* of pricing skills and experience in estimating costs, available within the contractor's firm.

This factor was ranked the ninth by clients regarding the *performance* provided by contractors, with RII = 0.597. It is clear that there is a significant difference compared to the *importance* RII of the same factor which was 0.860. Egemen and Mohammed (2005) found that the price offered by the contractor was ranked first considering *importance*, out of eighteen factors in Northern Cyprus. Maloney (2002) found that the price offered by the contractor was ranked twenty third out of twenty five factors with 19% importance and this is different from our results in The USA.

The least *important* factor was "completely explain administration policies, procedures, and coordination requirements before commencement" which was ranked the ninth by clients, with RII = 0.763. The local clients usually care about the outcome of the project more than the adopted procedures within the contractor's firm. Contractors usually perform some modifications to the design or specifications according to their experience after the approval by clients and/or consultants. Similarly, Egemen and Mohammed (2005) found that the process and procedures adopted by contractors were ranked the fifteenth and the sixteenth respectively, out of eighteen items regarding the *importance*. The mentioned authors found that these two factors were not important also. The contractors were not performing well in these factors. Local clients in Gaza Strip ranked this factor the sixth regarding the provided *performance*, with RII = 0.612, which means low level of satisfaction.

Another factor, considered least *important*, was "contribution to design and buildability of project" and it was ranked the eighth factor, with RII = 0.786. This was due to the competitive bidding/awarding procedures adopted in the local construction industry. The contractors can't contribute to the design before winning the bid. The clients were not totally satisfied with the *performance* of contractors regarding this factor. Clients ranked this factor the fourth regarding satisfaction with the contractors' performance, with RII = 0.681. Jin and Ling (2006), in their study in China, revealed that there is an excessive demand for early involvement of contractors in the project.

"The warranty conditions of the contractor firm offers" was ranked the seventh by clients regarding *importance*, with RII = 0.834. This was due to that the warranty conditions of the offer are not optional. The warranty conditions are obligatory requirement adopted in the general procurement procedures for providing construction services. This factor was ranked the first by clients regarding *performance*, with RII = 0.707. The warranty

conditions were ranked the eleventh factor by Egemen and Mohammed (2005) regarding *importance* out of the eighteen factors investigated in their study.

The two remaining factors, "providing reasonable estimates of work and defining mile stones when requests for starting work are issued", and "first interview and presentation of the implementation approach", were ranked the fifth and the sixth factors with RII = 0.859 and RII = 0.839 respectively. These factors were ranked around the average *performance* of the pre-construction group, which was RII = 0.848. The two factors had RII = 0.639 and RII = 0.684 respectively, regarding the provided *performance*. These RII were also around the average of this group which was RII = 0.670.

4.2.1.2 Consultants' perception regarding the satisfaction factors in the pre-construction stage

Table 4.2 illustrates the ranking of the satisfaction factors in the preconstruction stage regarding their *importance* based on the consultants' perception. This is based on the relative importance indices of the factors. Table 4.2 also illustrates the consultants' perception regarding satisfaction with the contractors' *performance*. This is based on the RIIs implied by consultants.

Table 4.2: Consultants' perception regarding importance and performance in the pre-construction stage.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Understanding of contract and specifications.	0.920	1	0.630	7
Ability and willingness to help develop the client brief of the project.	0.880	2	0.660	2
Providing a reasonable estimate of work and defining milestones, when requests for starting work are issued.	0.850	3	0.611	8
Plan of work and method statement.	0.840	4	0.650	4
First interview and presentation of the implementation approach.	0.832	5	0.660	2
The price offered by the contractor's firm compared to the client's estimate).	0.830	6	0.640	6
Contribution to design and buildability of project.	0.810	7	0.650	4
Warranty conditions of the contractor firm offers.	0.780	8	0.670	1
Completely explain administration policies, procedures and coordination requirements before commencement.	0.710	9	0.540	9
Average	0.828		0.635	

"Understanding of contract and specifications" was ranked the first as the most important factor, with RII = 0.920. This factor was considered very important according to the consultants' perception. This factor was considered very important and had an influence on the implementation process. This factor was ranked the seventh with RII = 0.630, regarding the provided *performance*. The consultants appeared to be significantly dissatisfied. The consultants are usually responsible for the preparation of the contract documents and specifications. The consultant is responsible for any problem occurs during the implementation. Better understanding of these documents will decrease the possibility of problems.

Regarding the consultants in the UK, Soetanto *et al*., (2001) found that the most important factors were: "Understanding of contract and specifications", and "Contribution to design and buildability of project". This result coincides with our results regarding the first factor in this group. Regarding *performance*, "first interview and presentation of the implementation approach" was the first followed by "Plan of work and method statement" as the second, and "Understanding of contract and specifications" was the third within its group in the study by Soetanto *et al*., (2001).

The factor "ability and willingness to help develop the client brief of the project" was ranked the second regarding importance, with RII = 0.880. Regarding *performance* this factor was ranked the second, with RII = 0.660. This indicates significant difference between *importance* implied by consultants, and *performance* provided by contractors. The consultants showed interest to have more involvement of the contractors in the brief development process. This will make use of contractors' experience, and reduces the required time for the overall cycle of project by overlapping between the different stages of implementation.

The third important factor was "providing reasonable estimate of work and defining milestones, when requests for starting work are issued", with RII = 0.850. The consultants ranked this factor in the eighth position regarding the provided *performance*. They gave this factor RII = 0.611, and this is less than the average RII of the group.

The "plan of work and method statement" was ranked the fourth, with RII = 0.840 regarding importance. Regarding *performance*, this factor was ranked the fourth by consultants, with RII = 0.650. This factor was ranked the second by consultants' respondents within its group in The UK by Soetanto *et al*., (2001).

In the remaining factors it was noticed that all of the factors require additional improvement by contractors, and require enhanced *performance* procedures and practices. The consultants ranked "the price offered by the contractor's firm compared to the clients' estimate" as the sixth factor regarding the *importance*, with RII = 0.830. This factor was ranked the sixth by consultants' respondents regarding *performance*, with RII = 0.640.

"The contribution to design and buildability of project" was ranked the seventh by consultants regarding importance, with RII = 0.810. Regarding *performance*, consultants ranked this factor the fourth, with RII = 0.650. This indicates the absence of integrating design and construction processes. This is due to the adopted procedures in the local construction industry.

"Warranty conditions of the contractor firm offers" was ranked the eighth regarding *importance*, with RII = 0.780. The consultants were not satisfied with the contractors' *performance* in this factor, although they ranked this factor the first, but with RII = 0.670. Egemen and Mohammed (2005) found that consultants in Northern Cyprus perceived less *importance* for this factor.

The least *important* factor was "Completely explain administration policies, procedures and coordination requirements before commencement". This factor was ranked the ninth, with RII = 0.710 regarding *importance*. Regarding satisfaction, consultants RII was 0.540.

4.2.1.3 Comparison between clients' and consultants' perceptions regarding the preconstruction stage

The clients and consultants agreed with each other regarding the importance of the factor "understanding of contract and specifications". The consultants appeared to be significantly dissatisfied compared to the clients regarding this factor. Clients ranked this

factor in the first place regarding performance, but with lower RII than that of *performance*.

The factor "providing reasonable estimate of work and defining milestones, when requests for starting work are issued" was considered also *important*, from the perception of both clients and consultants. Clients gave this factor RII = 0.859 regarding *importance* and consultants gave it RII = 0.850.

Regarding "providing reasonable estimate of work and defining milestones, when requests for starting work are issued", both client and consultants gave this factor approximately the same *importance*, because the public clients in Gaza Strip usually work with limited budgets. Any excess in the required budget may cause inability of paying the contractor which will lead to conflicts in the future.

Clients' respondents implied more *importance* on the factor "plan of work and method statement" than consultants' respondents. The clients also implied more *importance* to the factor "the price offered by the contractor's firm compared to the clients' estimate" than implied by consultants, and also clients were less satisfied with the contractors *performance* regarding this factor. This is reasonable because the consultants are not the ones who pay the costs of construction. The clients are more interested in the cost issues.

"The contribution to design and buildability of project" was perceived more important to consultants than for clients. This is clear through the RII implied by clients which was 0.786. This justifies why the consultants ranked this factor the fourth, with RII = 0.650, while clients ranked this factor the sixth, with RII = 0.681 regarding *performance*. The requirements of clients were fulfilled with low levels of *performance* regarding the contribution to design by contractors. Consultants were interested more than clients to make use of the contractors' experience in implementation.

Clients perceived that "warranty conditions of the contractor firm offers" was more *important* than perceived by consultants. This factor was ranked in the first place regarding *performance* by both clients and consultants with RII of 0.707 and 0.670 respectively. Clients implied more *importance* to the factor "completely explain administration policies, procedures and coordination requirements before

commencement" than implied by consultants. Regarding satisfaction with the *performance*, clients appeared to be more satisfied than consultants.

Clients and consultants considered this stage *important*. This is clear according to the RIIs indicated in Table 4.3. The average RII was 0.848 for clients, and 0.828 for consultants. This means that clients appeared to give more *importance* to the factors of the preconstruction stage. Regarding *performance*, clients were more satisfied than consultants. The consultants usually have higher standard in judging and evaluating contractors' *performance*. The consultants are usually the clients' representatives in the construction process. They are hired by clients to guarantee best value of money in the construction process, to provide the best consultancy service to the clients.

Both clients and consultants didn't reach the expected *performance* based on their perceived *importance* for the discussed factors. Enhancements are required by contractors in the preconstruction stage to achieve clients' and consultants' satisfaction. In general it can be noticed in Table 4.3 that when using the independent samples t - test that p-values for *importance* and *performance* were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.3: Comparison between average RIIs and correlation between clients and consultants regarding pre-construction stage using the independent samples t – test.

Group	Importance (Ideal)					
	Av. RII		Means		**t-value**	**p-value**
	client	Consultant	client	Consultant		
Pre-construction stage	0.848	0.828	4.240	4.138	1.005	**0.318**
	Performance (based on previous experience)					
	Av. RII		Means		**t-value**	**p-value**
	client	Consultant	client	Consultant		
	0.670	0.635	3.348	3.174	1.116	**0.268**

4.2.2 Group 2: Construction stage

This group discusses issues in the construction stage and it includes nine factors. The issues under consideration includes management, supervision, planning and organizing

the site activities, dealing with problems, and control on the adopted construction methodologies.

4.2.2.1 Clients perception regarding the satisfaction factors in the construction stage

Table 4.4 illustrates the difference between *importance* and *performance* from the point of view of clients. This is based on the relative importance index implied by client for each factor.

Table 4.4: Clients' perception regarding importance and performance in the construction stage

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Managing the site through top management level.	0.896	1	0.657	1
Providing updates on work as it progresses and providing periodic listing of all work orders and their status.	0.889	2	0.580	7
Site supervision and control through supporting personnel level	0.878	3	0.656	2
Ability to plan and programme properly.	0.876	4	0.585	6
Project control, monitoring process and cost control.	0.870	5	0.606	4
Compliance to local national regulations and guidelines.	0.854	6	0.571	8
Explaining what was done to solve a particular problem.	0.837	7	0.565	9
Proposed construction method.	0.817	8	0.649	3
Site organization, tidiness and cleanliness.	0.811	9	0.591	5
Average	0.859		0.605	

The most important factor was "managing the site through to management level". This factor was ranked the first by clients regarding the *importance*, with RII = 0.896. Continuous involvement of the top management of the contractor in the implementation process will enable mitigating defects and will keep project within the estimated time and budget. "Managing the site through top management level" was also ranked the first regarding the provided *performance* by clients, with RII = 0.657. This indicates that the contractors' *performance* is significantly below the expected. Contractors' top

management levels are usually monitoring the financial issues. They are usually interested in allocating materials and labors between the projects carried out by the contracting firm. This resulted in the difference between *importance* and *performance* RII values, although the factor was ranked first for both measures.

"Providing updates on work as it progresses and providing periodic listing of all work orders and their status" was ranked second by clients regarding *importance*, with RII = 0.889. This clarifies that clients need to be informed about the progress in their projects. Updating the status of the major elements or activities and informing the client about them, supports the client's satisfaction and insures the honesty of the contractor to the client. "Providing updates on work as it progresses and providing periodic listing of all work orders and their status" was ranked seventh by clients regarding the provided *performance* by contractors, with RII = 0.580. This is significantly less than the RII in the case of *importance*. This means that the clients are not involved in what is happening in their projects such as delays, changed specifications or defects in the work. This causes a lot of conflicts during and after the construction stage. The dissatisfaction of clients appears clearly regarding the *performance* of contractors regarding this factor. This factor was one of the least satisfactorily performed by the contractors.

Clients ranked "site supervision and control through supporting personnel level" in the third place regarding *importance*, with RII = 0.878. This indicates the *importance* of the role of site personnel in supervising the site. These personnel are the tool of the top management to control the implementation process. This factor was ranked second by clients regarding the provided *performance*, with RII = 0.656. This indicates that the supporting personnel in the site are not satisfying the clients' requirements and expectations. Usually, the supporting personnel in the site, other than engineers and surveyors, are not educated in the local market of Gaza. They are usually skilled workers, who have been working with the contractor for a long time. This indicates that contractors are not meeting the required standards of supervising the site. "Site supervision and control through supporting personnel level" was ranked fourth with average *importance* of 8.487 and was ranked third with average *performance* of 7.615 by Soetanto *et al.* (2001) in The UK.

The least important factor was "site organization, tidiness and cleanliness". This factor was ranked the ninth by clients, with RII = 0.811. Any accident that happens in the site due to ignorance of the organization, tidiness and cleanliness of the site will only affect the contractor. Regarding *performance*, "site organization, tidiness and cleanliness" was ranked the fifth, with RII = 0.591 by clients. Although this factor is for the benefit of contractors, they didn't do any effort to achieve better *performance*. This factor was ranked as the least important by client in the study of Soetanto *et al.* (2001) with average *importance* RI = 8.308, i.e. it was ranked the fifth. Regarding *performance* it was ranked the fourth with average *performance* RI = 7.333.

"Proposed construction method" was ranked eighth by clients regarding *importance*, with RII = 0.817. This factor was considered of low *importance* to the clients within the whole group, although the RII of this factor expresses relative importance. The contractor didn't achieve adequate satisfaction in this factor. Because clients ranked the "proposed construction method" in the third place, with RII = 0.649 regarding *performance*. This result is reasonable, because the clients require an appropriate construction method to be applied. But contractors must achieve better *performance* regarding this issue for their own benefit also. This factor was ranked sixteenth out of eighteen factors by Egemen and Mohammed (2005) and this is similar to our result, indicating that it was considered as one of the least important factors.

"Explaining what was done to solve a particular problem" was ranked seventh by clients regarding *importance*, with RII = 0.837. The client cares about the manner that contractors solve problems with. Clients were least satisfied with the *performance* of contractors. Clients ranked this factor the ninth, with RII = 0.565 regarding *performance*. Problems are usually solved in the site without referring to the client. Contractor may solve the problem according to his interests or benefits.

The other factors were ranked moderately regarding the *importance*. But the ranks and RIIs were different regarding the provided *performance*.

The "Ability to plan and programme properly" was ranked by the clients in the fourth place regarding *importance*, with RII = 0.876. This can be explained that the planning and programming means more to the contractors because they are the implementing party.

Any plan or programme that is justified by the contractor is acceptable to the client if it meets the schedule and budget. Regarding the *performance*, clients were found not satisfied with the provided *performance* regarding planning and programming. This factor was ranked the sixth, with RII = 0.585. The planning and programming process during the project need more enhancements. Additional integration and involvement of the clients will provide the client with knowledge about the situation of his project. This will bring in more satisfaction with the contractors' *performance*. "Ability to plan and programme properly" was ranked third with average importance RI = 8.641 regarding *importance* and fourth regarding *performance* with average importance RI = 7.333 by Soetanto *et al.* (2001). This factor was perceived less important for clients in Singapore than perceived by local clients in Gaza Strip. The clients were also not totally satisfied. (Ling and Chong, 2005)

"Project control, monitoring process and cost control" was considered moderately important within this group. This factor was ranked the fifth regarding *importance*, with RII = 0.870. This factor was expected to have more *importance*, because of the involvement of cost, monitoring and control of project. These are essential issues in any construction project. Clients were dissatisfied with the *performance*, because this factor was ranked fourth, with RII = 0.606 regarding *performance*. "Project control, monitoring process and cost control" was ranked the fifteenth in the study of Egemen and Mohammed (2005) out of eighteen factors, with RI = 0.455. It is clear that this factor is more important in our market than it is in northern Cyprus. Although this factor was ranked fifth regarding *importance* but the RII was = 0.870 which is significantly higher.

The “Compliance to local national regulations and guidelines” was ranked the sixth by clients regarding *importance*, with RII = 0.854. This factor was expected to have more *importance*. This is due to that most of the clients' respondents were representatives of the public owners in the local market, so they must have implied more *importance* to this factor. Regarding *performance*, the “Compliance to local national regulations and guidelines” was ranked the eighth, with RII = 0.571. This means that there are a lot of problems regarding compliance of contractors to the local guidelines. This is due to the absence of law that defines the interaction between parties in the field of construction. The “Compliance to local national regulations and guidelines” was ranked the first in its

group by Soetanto *et al.* (2001). This is because the regulations in the UK are strict and can't be discarded. The *performance* rank coincided with the *importance* in the study of Soetanto *et al.* (2001), but with a slightly less RI.

4.2.2.2 Consultants' perception regarding the satisfaction factors in the construction stage

Table 4.5 illustrates the RIIs of factors from the consultants' perception to differentiate between *importance* and *performance* in the construction stage.

The "Site supervision and control through supporting personnel level" was ranked the first as the most important factor in this group by consultants regarding *importance*, with RII = 0.930. This is considered a very important factor. Consultants considered the site supervisors and other supporting personnel as a key player in satisfying their requirements. The direct interaction between consultants' and contractors' personnel, if carried out sufficiently by contractors' staff, will lead to more satisfaction to consultants. Consultants ranked "Site supervision and control through supporting personnel level" in the third place, with RII = 0.650 regarding *performance*. This means that the *performance* of this factor is about 30 % less than the implied *importance*. This means a wide range of improvement is required regarding this factor. This is due to that the supporting personnel are highly influencing the general impression about the contractor's firm.

Table 4.5: Consultants' perception regarding importance and performance in the construction stage.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Site supervision and control through supporting personnel level	0.930	1	0.650	3
Project control, monitoring process and cost control.	0.920	2	0.530	7
Managing the site through top management level.	0.910	3	0.670	1
Ability to plan and program properly.	0.890	4	0.540	5
Explaining what was done to solve a particular problem.	0.880	5	0.580	4
Compliance to local national regulations and guidelines.	0.842	6	0.537	6
Site organization, tidiness and cleanliness.	0.820	7	0.500	8

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Providing updates on work as it progresses and providing periodic listing of all work orders and their status.	0.810	8	0.470	9
Proposed construction method.	0.80	9	0.670	1
Average	0.867		0.571	

Similarly, this factor was ranked the first by consultants, with an average RI = 8.839, regarding the implied *importance* by Soetanto *et al.* (2001). Regarding the *performance*, Soetanto *et al.* (2001) found that consultants didn't reach the expectations regarding this factor. Consultants ranked this factor the third with the average *performance* RI = 7.258.

"Project control, monitoring process and cost control" was ranked the second by consultants regarding *importance*. The RII of this factor was 0.920, which is 0.01 less than the most important factor. This indicates that the consultants are interested in the adopted control, monitoring and cost control process by contractors. This factor was ranked the seventh by consultants regarding the *performance* provided by contractors, with RII = 0.530. This was considered as one of the least satisfactorily performed factors by contractors. This is due to that the consultants are usually responsible for dealing with problems in the site due to inappropriate *performance* of contractors in controlling the processes and costs. If any variation in drawings or specifications exists, the client will approach the consultant for checking, justification or any other requisite.

The consultants' respondents ranked "managing the site through top management level" as the third important factor, with RII = 0.910. Consultants considered top management essential in the implementation of a project. Regarding *performance*, consultants considered this factor to be the best satisfactorily performed, based on the rank, but with RII = 0.670. That means a lot of improvement required by the top management levels with the different issues of implementing a project especially that interferes with consultants, such as variations, progress updates, control of costs, materials, equipment and work force.

The least important factor was “proposed construction method”. This factor was ranked the ninth by consultants’ respondents, with RII = 0.800. This factor was perceived to be less important to consultants in Northern Cyprus, with RI = 0.712. This factor, the “proposed construction method”, was ranked the first by consultants regarding the *performance*, with RII = 0.670. This indicates the inappropriate selection of implementation methods by contractors. The consultants are seeking better construction methodologies for the benefit of the project and the contractor. Contractors can make use of the consultants' professional abilities selecting appropriate methods of implementation.

“Providing updates on work as it progresses and providing periodic listing of all work orders and their status” was ranked the eighth by consultants' respondents, with RII = 0.810 regarding *importance*. This factor was expected to have more *importance*. Regarding *performance* contractors were performing bad regarding “Providing updates on work as it progresses and providing periodic listing of all work orders and their status”. The consultants ranked the *performance* the ninth, with RII = 0.470. This is a very low RII compared to the implied *importance*. Contractors have an insufficient *performance* regarding informing consultants about the progress in the project. A lot of improvement is required by contractors regarding this factor.

The “site organization, tidiness and cleanliness” was ranked the seventh by consultants' respondents regarding *importance*, with RII = 0.820. The reason for this rank is that the behavior of the contractor's team in the site has two types. The first is aesthetical that gives an impression regarding the degree of professionalism and capabilities of the contractor's staff. The second is that preserving tidiness and cleanliness gives a lot of benefits to the contractor himself by getting fewer injuries and less waste in tools and materials. This factor was ranked the eighth by consultants' respondents regarding the *performance*. The RII was 0.500, which means that consultants are not satisfied with the contractors' *performance*. This factor was ranked the third out of five regarding *importance*, with RI = 8.194, and was ranked the fifth out of five regarding *performance* with RI = 6.645 in the study by Soetanto *et al*. (2001) in the UK.

The other factors in this group were ranked moderately by consultants regarding *importance* and *performance*. The factor "ability to plan and program properly" was

ranked the fourth by consultants' respondents, with RII = 0.890. Regarding *performance* this factor was ranked the fifth, with RII= 0.540. the result for this factor shows *importance* to consultants and at the same time dissatisfaction with the *performance*. This factor was ranked the second regarding *importance* and fourth regarding *performance* by Soetanto *et al.* (2001).

"Explaining what was done to solve a particular problem" was ranked the fifth regarding *importance* by consultants' respondents, with RII = 0.880, and was ranked the fourth regarding *performance* with RII = 0.580.

The last factor in this group, "compliance to local national regulations and guidelines", was ranked the sixth by consultants' respondents, with RII = 0.842 with respect to *importance*, and was ranked also the sixth, with RII = 0.537 regarding the provided *performance*. This factor was ranked fourth by consultants in UK with RI = 8.161 and the first regarding *performance*, with RI = 7.677. This coincides with the results of this research. It can be noticed that, the last discussed three factors approximately coincides in the results between clients and consultants, in both *importance* and *performance*.

4.2.2.3 Comparison between clients' and consultants' perceptions regarding the construction stage

Consultants perceived that “project control, monitoring process and cost control” has more importance than perceived by clients' respondents. The factor “managing the site through to management level” was less important for clients than for consultants. This indicates the higher standard of judgment by consultants.

Both clients and consultants agreed that the factor “proposed construction method” was least important in this group. They approve the methods, but the implementation is based on the contractors' capabilities and resources.

The clients implied more importance to “providing updates on work as it progresses and providing periodic listing of all work orders and their status” than implied by consultants. The clients' perception regarding “site organization, tidiness and cleanliness” was very close to the consultants' perception regarding both *importance* and *performance*.

The group of construction stage factors was considered important by both clients and consultants. Clients implied 0.859 for the average *importance* of the group, and the consultants implied 0.867 respectively as illustrated in Table 4.6. Consultants implied more *importance* regarding this group. Regarding the *performance* provided, clients were found slightly more satisfied compared to consultants, but both RIIs, 0.605 for clients and 0.571 for consultants can be considered low. This indicates that both clients and consultants were dissatisfied with the contractors' *performance* regarding this group.

In general it can be noticed in Table 4.6 that when using the independent samples t-test that p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.6: Comparison between average RIIs and correlation between clients and consultants regarding construction stage using independent samples t-test.

Group	Importance (Ideal)					
	Av. RII		Means		Z-value	p-value
	client	Consultant	client	Consultant		
Construction stage	0.859	0.867	4.293	4.335	-0.403	**0.688**
	Performance (based on previous experience)					
	Av. RII		Means		Z-value	p-value
	client	Consultant	client	Consultant		
	0.605	0.571	3.025	2.857	0.986	**0.327**

4.2.3 Group 3: Principal measures

This group includes four sub-groups. These groups are adherence to schedule, adherence to budget, quality of construction and workmanship, and safety measures and standards. Each of these sub-groups includes a number of factors. The following sections will discuss each measure separately, based on the clients' perception in section 4.2.3.1 and based on the consultants' perception in section 4.2.3.2. A summary will discuss the difference between the two perceptions in section 4.2.3.3.

4.2.3.1 Clients' perception regarding the satisfaction factors in the principal measures

A. Adherence to schedule (time performance) – clients' perception

Table 4.7.a discusses the clients' perception regarding the adherence of contractors to schedule. The table illustrates the difference between *importance* and *performance*, based on the relative importance indices of the factors.

Table 4.7.a: Clients' perception regarding importance and performance in the time performance.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Finishing the project on time.	0.94	1	0.574	7
Plan and schedule jobs quickly.	0.87	2	0.579	6
Providing notifications and explanations for work delays.	0.87	2	0.635	2
Once a job is started it is completed quickly.	0.862	4	0.617	4
Maintaining sense of urgency.	0.837	5	0.646	1
Responding immediately to work status inquiries.	0.811	6	0.6	5
Give small jobs high priority.	0.758	7	0.63	3
Average	0.849		0.614	

The most *important* factor was "finishing the project on time". This factor was ranked the first by clients' respondents, with RII = 0.94. This result indicates that the adherence to schedule is the most important measure from all other principal measures. The time *performance* by contractors gives indication about general impression about his *performance* and may affect future opportunities of the contractor with the same client. Regarding *performance*, the time *performance* was ranked by clients' respondents as the least satisfactorily performed. The clients' respondents raked this factor the seventh, with RII = 0.574. This is about 36 % less than the implied *importance*.

This factor was ranked the second after the cost *performance*, with RI = 8.923 by Soetanto *et al*. (2001) in the UK, and was ranked the first in the study of Kärnä (2004) in Finland. Two factors were ranked the second by clients' respondents regarding

importance, with RII = 0.870. These factors are "plan and schedule jobs quickly" and "providing notifications and explanations for work delays". Commitment to the specified time was important for clients in Singapore by Ling and Chong (2005) but less than it was for clients in Gaza. This factor was ranked the seventh by clients in the study by Maloney (2002) with 76% importance by clients in the USA, which is different from our results. Al-Momani (2000) found that this factor was one of the least important factors in Jordan which differs from our results.

"Plan and schedule jobs quickly", indicate the professional skill for the contractors' personnel. Cumulative delays in performing quick schedules on emergencies or variations, causes the overall delay at the end of the project. "Plan and schedule jobs quickly" was ranked the sixth by clients' respondents. That indicates insufficient skills in doing such duties within the contractors' staff. On the other hand "providing notifications and explanations for work delays" was ranked the second by clients' respondents regarding *performance*, with RII = 0.635. That indicates that this factor is 24 % more *important* than the provided *performance*. This indicates a communication problem between clients and contractors. The contractor must inform the client about any delay in the project during all stages. The reasons must be explained and the two parties shall cooperate to overcome the problems in each stage.

The least important factor "give small jobs high priority" was ranked the seventh by clients' respondents, with RII = 0.758. That indicates the *importance* of adherence to schedule discarding the type or value of the item. This factor was ranked the third regarding *performance*, with RII = 0.630. This means that contractors are performing the activities of high monetary values and discard the small jobs. This causes delays and defects in the implemented works.

"Responding immediately to work status inquiries" was ranked in the sixth place, with RII = 0.811 by clients' respondents regarding the implied *importance*. This factor was expected to have more *importance* compared to other more important factors. Regarding *performance*, clients ranked this factor the fifth, with RII = 0.600. This means 20% less satisfaction for clients' respondents.

Clients' respondents ranked "Maintaining sense of urgency" as the fifth, with RII = 0.837. Regarding *performance*, "Maintaining sense of urgency" was ranked the first, but with RII = 0.646. That means dissatisfied clients and need for improvement.
The last factor in this sub-group, "Once a job is started it is completed quickly", was ranked the fourth regarding *importance*, with RII = 0.862, and was ranked the fourth regarding *performance*, but with RII = 0.617 by clients respondents.

It must be considered about the factors of this sub-group, that as in the previous groups, clients implied *importance* for the factors but contractors didn't meet the expected *performance*. Considering the group as a whole, the *importance* implied by clients was more than the *performance* provided by contractors. The average *importance* for the adherence to schedule was RII = 0.849, and the *performance* obtained RII = 0.614. In USA, time as a client satisfaction factor was ranked the fifth with a mean value of 3.97, coming after quality, cost, response to complaints and communication. This was documented in the study by Ahmed and Kangari, (1995).

B. Adherence to budget (cost performance) – clients perception

This sub-group discusses the perception of clients regarding the adherence to budget. It includes five satisfaction factors discussed below. Table 4.7.b shows the results obtained for this sub-group for clients' respondents.

Table 4.7.b: Clients' perception regarding importance and performance in the cost performance.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Finishing project within budget.	0.883	1	0.629	1
Employing adequate cost control measures to stay within budget.	0.874	2	0.591	4
Having adequate financing arrangements.	0.834	3	0.606	3
Reducing wastes to a minimum.	0.823	4	0.621	2
Conducting value engineering to reduce costs optimizing the available feasible alternatives.	0.809	5	0.513	5
Average	0.845		0.592	

"Finishing project within budget" was ranked the first by clients' respondents, with RII = 0.883. This is reasonable; because cost is one of the most important issues when talking about a construction project. At the same time the factor "finishing project within budget" was ranked the first regarding the provided *performance*, with RII = 0.629. The low RII can be justified due to the oscillation of prices for different materials due to the repetitive closures of the crossings around Gaza Strip. This can be added to the lack of adequate pricing skills within the contractors' personnel. Usually any variation in the costs is out of contractors' control and it is due to unforeseen circumstances. This factor was ranked the eighth by clients in USA with 72% importance in the study of Maloney (2002) which is different from our result. This factor was the most important out of fifteen factors in the study by Al-Momani (2000) in Jordan, but with low level of satisfaction which agrees with our results.

The second important factor chosen by clients' respondents was "Employing adequate cost control measures to stay within budget". This factor had RII = 0.874 regarding *importance*. This factor appears to be important to clients, because controlling the costs of the project will decrease the probability of having shortage in the budget, and claims by contractors. Each item in the bill of quantities must have a definite budget so costs can be controlled for the whole project. This factor, "employing adequate cost control measures to stay within budget", was ranked the fourth by clients' respondents regarding *performance*, with RII = 0.591. This means that contractors are not employing adequate cost control measures to stay within budget.

"Having adequate financing arrangements" was ranked the third by clients' respondents regarding *importance*, with RII = 0.834, and regarding *performance*, with RII = 0.606. These values are around the average values of the sub-group. This indicates that contractors shall recruit or educate skilled personnel to control and monitor the financial process within each project to keep the projects under control.

Clients' respondents ranked "reducing wastes to a minimum "in the fourth place regarding *importance*, with RII = 0.823. This factor was ranked the second regarding *performance*, with RII = 0.621. In this sub-group it appears that contractors care mostly about adherence to budget than about reducing the wastes. This is because the contactor is the

one who will mostly benefit from waste reduction. The client usually doesn't pay the contractor for the wastes. Through the results, the contractors were found not performing adequately regarding this factor.

The least important factor in this group was "conducting value engineering to reduce costs optimizing the available feasible alternatives". This factor was ranked the fifth regarding *importance*, with RII = 0.809 by clients' respondents. This factor is only 8% less important than the factor ranked first. This is due to the absence of knowledge and skills to use value engineering in the local market. Contractors are usually committed to the specifications defined in the bill of quantities of the project. Usually there is no wide variety of alternatives to choose between. The items' description in the bill of quantities usually limits the requirements to the best approved high quality materials or supplies. The nature of the local market of Gaza Strip gives fewer alternatives to chose between. *Performance* regarding this factor was ranked the fifth, with RII = 0.513 by clients' respondents. Neither clients nor contractors are responsible for that situation; it is the common practice and market's circumstances.

C. Quality of construction and workmanship – clients' perception

This sub-group contains seven factors. The *importance* of these factors and the *performance* provided by contractors are tested in this section. The testing is based on the RII implied by clients' respondents for each factor. Table 4.7.c shows the results obtained for this group for clients' respondents.

Table 4.7.c: Clients' perception regarding importance and performance in the quality of construction and workmanship.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Applying quality assurance procedures.	0.916	1	0.697	1
Ensuring the durability of the completed facility as an integral part of contractor functions. (Innovation through new ideas or technologies)	0.818	2	0.621	3
Perceiving quality as an essential dimension of overall client satisfaction.	0.817	3	0.653	2

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Making efforts by the contractor to meet or exceed all specifications or conformance requirements. (Outstanding care about details)	0.815	4	0.561	6
Giving top priority to the performance (operational) characteristics of the facility.	0.809	5	0.606	4
Giving equal performance to the secondary characteristics of features of the facility.	0.78	6	0.597	5
Giving importance to aesthetics, such as how the output feels, sounds and looks.	0.737	7	0.552	7
Average	0.813		0.613	

The most important factor in this group was "applying quality assurance procedures". This factor was ranked the first by clients respondents, with RII = 0.916. In the whole group of principal measures, this factor comes next after the adherence to time. Quality assurance procedures include testing the supplied materials and testing the work after finishing the works, and precise monitoring and inspection of works by clients' supervisors or consultants' staff. Contractors usually try to minimize test times for materials and other works to minimize the cost and increase the profits. This is clear through the dissatisfaction of clients in the ranking regarding the *performance* of this factor. Although clients ranked "applying quality assurance procedures" in the first place regarding *performance* compared to other factors in this group. But the RII was 0.697, which is about 20% less than the implied *importance*.

This coincides with the results obtained in the study by Soetanto *et al.*(2001) in UK, because this factor was ranked the fourth out of 48 factors, with RI = 8.846 regarding *importance*. Kärnä (2004) found that this factor was ranked the seventeenth by public and private owners regarding *performance* out of 22 factors, and that differs from our results. Maloney (2002) found that this factor was ranked the twelfth with 61% importance by clients in the USA.

"Ensuring the durability of the completed facility as an integral part of contractor functions – (Innovation through new ideas or technologies)" was ranked the second by clients respondents regarding *importance*, with RII = 0.818 which is about 10% less

important than the first factor. This factor is slightly less important; because there are no special structures or unique facilities constructed in Gaza Strip that requires special considerations regarding quality. Most of the projects are implemented depending on the previous local experience. Monitoring and testing are carried out per each activity. Although this factor seems important, contractors were not performing as expected. Clients ranked this factor third regarding the *performance*, with RII = 0.621. This rank was around the average of the group regarding *performance*.

One of the most important factors was "Perceiving quality as an essential dimension of overall client satisfaction" that was ranked third by clients respondents, with RII = 0.817. This factor was expected to be more important, because it can lead to the improvement of factors considered more important in this sub-group. Contractors didn't provide adequate performance regarding this factor. Clients ranked this factor the second, with RII = 0.653, which is about 15% less than the implied *importance*.

The least important factor was ranked the seventh by clients' respondents, with RII = 0.737. This factor was "giving importance to aesthetics, such as how the output feels, sounds and looks". This factor was not considered so important because the contractor is implementing the project, based on plans approved by clients with specified procedures and specifications. Regarding *performance*, clients ranked this factor also the seventh, but with RII = 0.552, which is 18% less than the implied *importance*.

The factor "giving equal performance to the secondary characteristics of features of the facility" was ranked the sixth by clients' respondents regarding *importance*, with RII = 0.780 and was ranked the fifth, with RII = 0.597 regarding *performance*. This factor was considered slightly important for clients and at the same time not adequately performed by contractors.

The factor, "Giving top priority to the performance (operational) characteristics of the facility", was ranked in the fifth place by clients' respondents regarding *importance* with RII = 0.809, and the fourth regarding *performance*, with RII = 0.606.

These two last factors were moderately important and unsatisfactorily performed by contractors. As in the other factors, those two last factors require more enhancements by contractors regarding the *performance*.

D. Safety measures and standards – clients' perception

This group includes nine factors, considering safety measures in construction projects. Table 4.7.d illustrates the difference between *importance* of factors and the *performance* provided by contractors regarding safety measures and considerations.

Table 4.7.d: Clients' perception regarding importance and performance in safety measures and standards.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Personal protection equipment.	0.906	1	0.504	2
Availability of first aid supplies.	0.868	2	0.474	4
Compliance with local safety regulations.	0.859	3	0.469	6
Commitment of the top management with the safety policies and regulations.	0.854	4	0.472	5
Regular meetings with the site personnel to insure safety awareness within the staff.	0.848	5	0.48	3
Accidents' investigation and documentation in the site.	0.834	6	0.523	1
Availability of safety training for the job site personnel.	0.823	7	0.437	8
Availability of safety plan.	0.82	8	0.463	7
Availability of safety director.	0.772	9	0.414	9
Average	0.841		0.471	

The most important factor in this sub-group was "personal protection equipment". This factor was ranked the first by clients' respondents regarding *importance*, with RII = 0.906. Regarding *performance*, clients ranked this factor the second, with RII = 0.504. That means 40% less than the implied *importance*. The clients are interested that contractors be aware of using protection equipment. This will decrease accidents in the site. Although better *performance* by contractors, regarding protection equipment, will serve the contractors themselves, but the *performance* level is very low. This gives negative indication about the contractor, with respect to the clients' choice in the future. Because using the personal protection equipment is easily noticed in the site.

"Availability of first aid supplies" was ranked the second by clients' respondents regarding *importance*, with RII = 0.868. If the personal protection equipment is not available, then at least first aid supplies must exist in the site. Contractors didn't consider the protection of their own workers. This is clear through the rank by clients' respondents regarding *performance*, which was fourth, with RII = 0.474.

The "compliance with local safety regulations" was ranked the third by clients' respondents regarding *importance*, with RII = 0.859. On the other hand, this factor was ranked the sixth regarding the *performance*, with RII = 0.469. Both the implied *importance* and the provided *performance* indicate the absence of any care regarding considering safety measures. Usually, there is no sufficient expertise to handle safety issues within the contractors' staff. There are no strict limitations regarding safety measures in the construction sites. Safety was ranked in the tenth place from the perception of clients by Kärnä (2004) in Finland.

The least important factor was "availability of safety director". This factor was ranked the ninth regarding *importance*, with RII = 0.772. Regarding *performance*, this factor was ranked the ninth also, but with RII = 0.471 and that indicates dissatisfaction by clients. The clients' perception states that if there is no safety culture within the labors and other staff members, what will be the role of the safety director?

"Availability of safety plan" was ranked the eighth, with RII = 0.820 by clients' respondents, and was ranked the seventh, with RII = 0.463 regarding the *performance*. This is related to the previous factor, "Availability of safety director", but with more *importance*. The safety plan will result nothing if there were no body qualified to carry out and implement the plan. This factor was ranked eighteenth by Egemen and Mohammed (2005) in Cyprus regarding *importance* and this is very close to our result.

Clients' respondents ranked the factor "availability of safety training for the job site personnel" in the seventh place regarding *importance*, with RII = 0.823. But regarding *performance*, clients ranked this factor in the eighth place, with RII = 0.437. The clients implied *importance* regarding the awareness of contractors' staff about safety

consideration, but contractors themselves considered that this will cost them and decrease their profits. Most of contractors discard safety awareness to save as much money as they can.

The remaining three factors in this sub-group were ranked moderately regarding *importance*. "Commitment of the top management with the safety policies and regulations" was ranked the fourth regarding *importance*, with RII = 0.854 and was ranked the fifth regarding *performance*, with RII = 0.472. The "regular meetings with the site personnel to insure safety awareness within the staff" was ranked the fifth regarding *importance*, with RII = 0.848. This factor was ranked the third regarding *performance* provided by contractors, with RII = 0.480.
The last factor was "accidents' investigation and documentation in the site". This factor was ranked the sixth regarding *importance* by clients' respondents, with RII = 0.834 and first regarding *performance*, with RII = 0.523.

The last three discussed factors appear to be moderately important with respect to the whole sub-group and at the same time require a lot of improvement. Soetanto *et al.* (2001) ranked the health and safety *performance* management in the second place regarding *importance* within its group, with RI = 8.795 and in the second place regarding *performance*, with RI = 8.051 from the perception of clients. Maloney (2002) found that this factor achieved low importance for clients in the USA, because it obtained 55% importance and was ranked sixteenth out of twenty five factors.

4.2.3.2 Consultants' perception regarding the satisfaction factors in the principal measures

A. Adherence to schedule (time performance) – Consultants' perception

Table 4.8.a illustrates the consultants' perception regarding the *importance* and *performance* regarding the identified factors of this sub-group. This is based on the relative importance indices for the factors by the local consultants.

Table 4.8.a: Consultants' perception regarding importance and performance in adherence to schedule (*time* performance).

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Finishing the project on time.	0.94	1	0.66	1
Maintaining sense of urgency.	0.88	2	0.62	2
Plan and schedule jobs quickly.	0.87	3	0.54	6
Providing notifications and explanations for work delays.	0.87	3	0.6	4
Once a job is started it is completed quickly.	0.85	5	0.61	3
Responding immediately to work status inquiries.	0.83	6	0.57	5
Give small jobs high priority.	0.76	7	0.53	7
Average	0.857		0.59	

The factor "finishing the project on time" was ranked the first by consultants' respondents, with RII = 0.940. This illustrates the *importance* of finishing the project on time from the perception of consultants. Regarding *performance*, "finishing the project on time" was ranked the first again, but with RII = 0.660. That means dissatisfied consultants with the contractors' *performance*, with about 28% less than the implied importance. This factor was ranked second within its group with RII 8.733 in the study of Soetanto *et al.* (2001) coming after the quality from the perception of consultants' respondents in The UK.

The second important factor ranked by consultants' respondents was "maintaining sense of urgency". This factor had an RII = 0.880. The consultants expected the contractors to perform the work as soon as possible and as if any delay in any activity will delay the whole project. The contractors were 26% below the implied *importance* by consultants for this factor. Consultants' respondents ranked this factor in the second place, with RII = 0.620.

The least important factor, from the perception of the consultants' perception, in the time *performance* sub-group was "give small jobs high priority". The consultants' respondents considered every activity as a priority to implement the project as soon as possible. The consultants' respondents ranked this factor the seventh, with RII = 0.760. Regarding the *performance*, this factor was also ranked the seventh, but with RII = 0.530. This is 23% less than the implied *importance*. This indicates that contractors are dealing carelessly

with the different activities. This is due to the weak level of professionalism and the common culture in construction.

"Responding immediately to work status inquiries" was ranked the sixth by consultants' respondents, with RII = 0.830 regarding *importance*. This factor was expected to have more *importance*. This is because consultants are usually the responsible for following up work on behalf of clients. This will enable early solution for problems. On the other hand, this factor was ranked the fifth regarding *performance*, with RII = 0.570. This illustrates that consultants were not satisfied with the contractors' *performance* regarding this factor.

The remaining factors were ranked moderately regarding both *importance* and *performance*. The factor "plan and schedule jobs quickly" was ranked the third by consultants' respondents, with RII = 0.870 regarding *importance*. This factor was ranked the sixth regarding *performance*, with RII = 0.540, i.e. 30% less than the implied *importance*. "Providing notifications and explanations for work delays" was ranked also third by consultants' respondents regarding *importance*, with RII = 0.870. This factor was expected to have more *importance* because this will enforce the relationship, cooperation and coordination between consultants and contractors. This will lead to better *performance* and faster implementation. The consultants' respondents ranked the *performance* the fourth, with RII = 0.6, and that illustrates dissatisfaction.

The last examined factor, "once a job is started it is completed quickly", was ranked the fifth regarding *importance*, with RII = 0.83, and regarding *performance*, this factor was ranked the third, with RII = 0.61.

B. Adherence to budget (cost performance) – Consultants' perception

This sub-group includes five factors, considering the important issues regarding cost *performance*. This sub-group examines the *importance* and *performance*, based on the relative importance indices implied by consultants. The obtained data are summarized in Table 4.8.b.

Table 4.8.b: Consultants' perception regarding importance and performance in adherence to budget (cost performance).

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Finishing project within budget.	0.91	1	0.66	1
Employing adequate cost control measures to stay within budget.	0.84	2	0.58	3
Conducting value engineering to reduce costs optimizing the available feasible alternatives.	0.82	3	0.56	4
Having adequate financing arrangements.	0.82	3	0.56	4
Reducing wastes to a minimum.	0.8	5	0.66	1
Average	0.838		0.604	

The most important factor from the perception of consultants' respondents was "finishing project within budget". This factor was ranked the first, with RII = 0.910. This high rank indicates that consultants consider the adherence to budget very important. Consultants were dissatisfied with the contractors' *performance*. They ranked "finishing project within budget" in the first place regarding *performance*, but with RII = 0.660, which is 24% less than the implied *importance*. The dissatisfaction must be examined, and the reason must be identified whether the dissatisfaction is due to unprofessional skills of contractors, or due to local conditions of the construction market.

The least important factor was "reducing wastes to a minimum". This factor was ranked the fifth by consultants' respondents regarding *importance*, with RII = 0.800. Consultants considered that contractors were relatively performing well, in this factor, with respect to other factors. Consultants ranked this factor the first regarding *performance*, with RII = 0.660. A lot of improvement is required, because reducing the waste will benefit the contractors mainly, and at the same time will satisfy the consultants regarding the perception about the contractors' *performance*.

"Employing adequate cost control measures to stay within budget" was ranked the second by consultants' respondents regarding *importance*, with RII = 0.840. While consultants' respondents ranked this factor the third regarding the *performance* of contractors, with RII = 0.580. This indicates that consultants are expecting improvements by contractors

regarding the adopted cost control measures, this can cause improved adherence to budget. The main obstacle for this will be the oscillation of prices as mentioned before, caused by closures of the borders and the absence of settled circumstances in the local market.

"Conducting value engineering to reduce costs optimizing the available feasible alternatives" didn't take *importance* for consultants to be conducted by contractors, because value engineering is the responsibility of the consultants during the design stage in usual. The contractors can perform analysis of the market during the pricing process and during the mobilization period to overcome any wide differences between the estimates and the actual costs. Consultants' respondents ranked this factor the third regarding *importance*, with RII = 0.820. Regarding *performance*, consultants' respondents ranked "conducting value engineering to reduce costs optimizing the available feasible alternatives" in the fourth place, with RII = 0.560. This indicates inadequate *performance* by contractors that requires improvement.

"Having adequate financing arrangements" coincided in the rank with "conducting value engineering to reduce costs optimizing the available feasible alternatives" regarding *importance* and *performance*. This factor was ranked the third, with RII = 0.820 regarding *importance*, and was ranked the fourth, with RII = 0.560 regarding *performance*. This factor is related to the previous factor. This is because conducting value engineering without adequate financial arrangements will not benefit the implementation of the project activities and will lead to cost overruns.

C. Adherence to quality of construction and workmanship – Consultants' perception

This group contains seven factors, as mentioned before, in the case of clients. It considers quality issues regarding the general approach of the contractor in addition to the quality of workmanship. These factors are compared to each other base on the RIIs implied by consultants for both *importance* and *performance* in Table 4.8.c.

Table 4.8.c: Consultants' perception regarding importance and performance in quality of construction and workmanship.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Applying quality assurance procedures.	0.92	1	0.56	6
Ensuring the durability of the completed facility as an integral part of contractor functions.(Innovation through new ideas or technologies)	0.89	2	0.6	1
Giving top priority to the performance (operational) characteristics of the facility.	0.87	3	0.57	4
Making efforts by the contractor to meet or exceed all specifications or conformance requirements. (Outstanding care about details)	0.84	4	0.6	1
Perceiving quality as an essential dimension of overall client satisfaction.	0.8	5	0.6	1
Giving equal performance to the secondary characteristics of features of the facility.	0.78	6	0.57	4
Giving importance to aesthetics, such as how the output feels, sounds and looks.	0.76	7	0.526	7
Average	0.837		0.576	

The most important factor was "applying quality assurance procedures". This factor was ranked the first by consultants' respondents, with RII = 0.920. Consultants considered this factor very important, because they can only monitor these procedures to insure the quality during implementation in the site. Contractors were 36% below the implied *importance*. Consultants' respondents ranked this factor in the sixth place regarding *performance*, with RII = 0.560. The dissatisfaction is obvious and contractors are required to improve that issue efficiently.

Consultants' respondents ranked "ensuring the durability of the completed facility as an integral part of contractor functions" in the second place regarding *importance*, with RII = 0.890. This is reasonable because the project elements are not inspected before insuring the results of testing for each element. But regarding *performance*, consultants ranked this factor the first, with RII = 0.600. It is important to ask the consultants, if this factor is not met, how they accept and approve projects?

The least important factor was "giving importance to aesthetics, such as how the output feels, sounds and looks". This factor was ranked the seventh by consultants, with RII = 0.760. Consultants considered the contractors' *performance* less than required. Consultants' respondents ranked this factor the seventh regarding *performance*, with RII = 0.526.

Another least important factor was "giving equal performance to the secondary characteristics of features of the facility". This factor was ranked the sixth regarding *importance* by consultants' respondents, with RII = 0.780. This factor was expected to have more *importance*, because it directly influences the characteristics of the project. Whether the elements are major or secondary, consultants are interested to get best implementation for them all. Regarding *performance*, "giving equal performance to the secondary characteristics of features of the facility" was ranked the fourth by consultants' respondents, with RII = 0.570. This indicates that contractors have priorities which may differ from that of the consultants. This may cause problems during implementation.

The remaining factors were ranked moderately regarding *importance*. Regarding *performance* they approximately got the same indices. The factor "giving top priority to the performance (operational) characteristics of the facility" was ranked the third by consultants' respondents regarding *importance*, with RII = 0.870. This factor was considered important due to its direct relation to the operational characteristics of the project, i.e. the end result of a construction process. Regarding *performance* contractors were 30% less than the implied *importance*. Consultants ranked this factor the fourth, with RII = 0.570. This factor is essential to be improved by contractors.

"Making efforts by the contractor to meet or exceed all specifications or conformance requirements" and "perceiving quality as an essential dimension of overall client satisfaction" were ranked the fourth and the fifth by consultants' respondents, with RIIs = 0.840 and 0.800 respectively. These two factors will empower the relations between consultants and contractors and bring in more cooperation and mutual understanding regarding the different implementation issues. Regarding *performance*, these two factors were ranked both in the first place, with RII = 0.600, i.e. as all the other factors in this sub-group, these factors require improvements. Soetanto *et al.* (2001) found that quality in general came first in the principal sub-group, with RI = 8.800.

D. Adherence to Safety measures and standards – Consultants' perception

This group includes nine factors considering the *importance* and *performance* according to consultants' perception regarding safety measures and considerations during construction projects. Table 4.8.d shows the results of this sub-group.

Table 4.8.d: Consultants' perception regarding importance and performance in Safety measures and standards.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Availability of first aid supplies.	0.87	1	0.4	2
Personal protection equipment.	0.84	2	0.41	1
Compliance with local safety regulations.	0.84	2	0.39	5
Availability of safety plan.	0.8	4	0.4	2
Accidents' investigation and documentation in the site.	0.79	5	0.4	2
Availability of safety training for the job site personnel.	0.79	6	0.36	7
Commitment of the top management with the safety policies and regulations.	0.78	7	0.37	6
Availability of safety director.	0.78	7	0.36	7
Regular meetings with the site personnel to insure safety awareness within the staff.	0.74	9	0.36	7
Average	0.803		0.383	

The most important factor from the perception of consultants was "availability of first aid supplies". This factor took the first place, with RII = 0.870. "Availability of first aid supplies" was ranked the second by consultants regarding *performance*, with RII = 0.400, i.e. 47% less than the implied *importance*. This indicates the *importance* compared to the actual *performance* by contractors. The safety issue was perceived with low importance to consultants in Northern Cyprus, with RI = 0.468. (Egemen and Mohammed, 2005)

"Personal protection equipment" was ranked the second by consultants' respondents, with RII = 0.840 regarding *importance*. This is slightly less than the first factor. This factor was ranked the first by consultants' respondents regarding *performance*, with RII = 0.410. The first two factors indicate the *importance* of considering safety measures. The absence of safety supplies and personal tools are reflected on the large numbers of accidents that

occur in the sites in Gaza Strip. The contractors' consideration of safety measures is for the contractors' own benefit.

The third most important factor from the perception of consultants is "compliance with local safety regulations". This factor was also ranked the second by consultants' respondents, with RII = 0.840 regarding *importance*. This is considered reasonable that consultants are interested to let contractors comply with local regulations regarding safety in the site. But there are no such laws to obligate contractors to comply with local regulations. Regarding the contractors' *performance*, consultants ranked "compliance with local safety regulations" in the fifth place, with RII = 0.390, and this is 45% less than the implied *importance*.

The least important factor was "regular meetings with the site personnel to insure safety awareness within the staff". This factor was ranked the ninth by consultants' respondents regarding *importance*, with RII = 0.740. The result is reasonable; because meeting the staff members and making sure of the awareness of safety considerations, is the contractors' responsibility. Regarding *performance*, consultants' respondents ranked the factor "regular meetings with the site personnel to insure safety awareness within the staff" in the last place, which was the seventh due to repetition. This factor had RII = 0.383 which is very low. This means between dissatisfied and totally dissatisfied. This indicates that the contractors almost didn't consider the safety issues at all.

"Availability of safety director" was also one of the least important factors. Consultants' respondents ranked this factor the seventh, with RII = 0.780. "Commitment of the top management with the safety policies and regulations" was ranked the same regarding *importance*. These two factors appeared to be with the same meaning, because the top management may include the safety director. These two factors were slightly important, because the top management is related to the consultants. Regarding the *performance*, "Availability of safety director" was ranked seventh by consultants' respondents, with RII = 0.360 and the "commitment of the top management with the safety policies and regulations" was ranked the sixth, with RII = 0.370. This almost coincides with the factor "regular meetings with the site personnel to insure safety awareness within the staff" rank and RII.

The "availability of safety plan" was ranked the fourth by consultants' respondents, with RII = 0.800. The contractors' *performance* in this factor was about 40% less than the implied *importance*. Consultants ranked the "availability of safety plan" in the second place, with RII = 0.390. This means that there are no emergency procedures, and any accident can cause death for labors or other staff members due to carelessness towards safety considerations.

The last two factors, "accidents' investigation and documentation in the site" and "availability of safety training for the job site personnel" was both ranked in the fifth place regarding *importance* by consultants' respondents, with RII = 0.790. The two factors indicate the consultants care about staff safety practices, and that means higher level of professional *performance* required by contractors. Regarding *performance*, "accidents' investigation and documentation in the site" was ranked the second, with RII = 0.400, i.e. about 40% less than the implied *importance* by consultants. "Availability of safety training for the job site personnel" was ranked the seventh, i.e. the last regarding *performance*, with RII = 0.360, which is about 36% less than the implied *importance*. That reflects the very low *performance* levels as in all other factors in the safety considerations' sub-groups.

4.2.3.3 Comparison between clients' and consultants' perceptions regarding the principal measures

Both clients and consultants perceived that "finishing the project on time" was the most important factor. Due to the uniqueness of the situation in Gaza Strip, the reason for unsatisfactorily performed adherence to schedule must be defined by both the clients and the consultants, either due to force majeure or due to inadequate *performance* by contractors. The clients and consultants must support the contractor to enhance their *performance* by their available experience, especially the consultants.

It was found that if the factor "maintaining sense of urgency" was adopted in the site by contractors, both clients and consultants will be more satisfied, due to faster implementation. Regarding the factor "finishing project within budget", clients and consultants agreed with each other that this factor was most important within its group. The clients also agreed with the consultants that "applying quality assurance procedures" was the most important within its sub-group of quality performance.

The factors "ensuring the durability of the completed facility as an integral part of contractor functions" and "giving importance to aesthetics, such as how the output feels, sounds and looks" were perceived important for consultants more than clients, but both of them were not adequately satisfied. The clients and the consultants are not fairly judging this issue because while they accept the work which is not performed appropriately, they are giving high importance for this factor and expect better level of performance.

The "personal protection equipment" and "availability of first aid supplies" were ranked as the most important factors for both clients and consultants regarding the safety considerations. The contractors should know that both clients and consultants will be satisfied if the contractors committed to the safety considerations and precautions. Finally, the "availability of safety plan" was recommended by both clients and consultants to be adopted with the same degree.

Clients and consultants implied *importance* regarding the group of principal measures. The average RII implied by clients was 0.837. Consultants also implied approximately the same RII for that group. A slight difference existed between clients and consultants regarding the provided *performance*. Clients' average RII was 0.572 and for consultants was 0.538, i.e. about 3.4% in difference.

Clients considered time as the most important sub-group with average RII = 0.849. The cost came the second with average RII of 0.845. Safety came the third with average RII = 0.841, and quality came the last with average RII = 0.813. In the case of consultants the ranking of the sub-group was: time in the first place with average RII of 0.857, cost in the second place with average RII of 0.838, quality in the third place with average RII of 0.837, and finally safety in the fourth place with RII = 0.803. Although the differences were slight, but differences and ranks revealed that time was the most important measure, rather than being quality or cost. Safety was ranked with low *importance* as expected, with very low levels of *performance* too. Regarding *performance*, the results showed low levels of satisfaction. Time *performance* was relatively satisfactory, it was ranked the first by clients with average RII = 0.614, quality came in the second place with a very slight difference. Cost was ranked the third, with RII = 0.592, and finally came the safety with average RII = 0.471. The consultants gave lower RIIs for most of the sub-groups. Cost came the first with average RII = 0.604, time came the second with average RII = 0.590, quality was ranked the third with average RII = 0.576 and finally came the safety as in the case of clients but with lower RII which was 0.383. In general it can be noticed in Table

4.9 that when using the independent samples t-test that p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.9: Comparison between average RIIs and correlation between clients and consultants regarding principal measures using independent samples t-test.

Time performance	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.849	0.857	4.246	4.286	-0.356	0.723
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.614	0.590	3.069	2.950	0.693	0.490
Cost performance	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.845	0.838	4.224	4.190	0.277	0.783
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.592	0.604	2.959	3.020	-0.285	0.776
Quality of construction and workman ship	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.813	0.837	4.068	4.186	-1.036	0.303
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.613	0.576	3.066	2.881	1.065	0.290
Safety measures and standards	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.841	0.803	4.207	4.017	1.295	0.199
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.471	0.383	2.354	1.917	1.951	0.054

4.2.4 Group 4: Resources management

This group includes ten satisfaction statements. These satisfaction statements discuss the contractors' abilities and resources available for implementing construction projects. The defined factors will discuss managerial, financial, and personnel capabilities of contractors. The following sections will discuss the perceptions of clients and consultants regarding *importance* and *performance*. The discussion will be based on the clients' perception in section 4.2.4.1 and based on the consultants' perception in section 4.2.4.2. A summary will discuss the differences between the two perceptions for each factor in section 4.2.4.3.

4.2.4.1 Clients' perception regarding the satisfaction factors in the resources management

The resources management is a very essential issue in every human activity. Knowing the availability of the different types of resources, and knowing how to exploit each of them is one of the key success factors of any process. Table 4.10 shows the clients' perception regarding the satisfaction statements in the resources management group.

Table 4.10: Clients' perception regarding importance and performance in the resources management.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Maximum resources and financial capabilities.	0.921	1	0.591	8
Strength of contractor site team (i.e. quantity).	0.876	2	0.641	4
Manpower management (quantity and quality of craft operatives).	0.873	3	0.638	5
Material management.	0.87	4	0.62	7
Type of plant and equipment available and suitability of the equipment.	0.854	5	0.654	3
Equipment and plant management.	0.842	6	0.69	1
Payment to subcontractors and suppliers (on time).	0.842	6	0.573	9
Concern/awareness for environmental issues.	0.842	6	0.509	10
Management and co-ordination of subcontractors and suppliers.	0.834	9	0.626	6
Contractor’s familiarity with local suppliers, labors, etc.	0.783	10	0.657	2
Average	0.854		0.621	

The clients' respondents perceived that the most important factor in this group is the availability of "maximum resources and financial capabilities". This factor was ranked the first regarding *importance* with RII = 0.921, and this is a very high relative importance index compared to other satisfaction statements. This means that the clients are interested in hiring a contractor with adequate quantity of the different types of resources. That reflects better chance for future works or opportunities. This was also reflected on the general *performance* level of the contractor and by the way on the level of *performance* provided to the clients.

Regarding the *performance* provided in this factor, clients' respondents ranked this factor as one of the least satisfactorily performed factors. This factor was ranked the eighth, with RII = 0.591 regarding the provided *performance* and that is 30% less than the implied *importance* by clients. This means that improvement is required to meet the requirements of the local clients. The contractors usually depend on the advanced payments provided by clients depending on the type of project and source of donation. Any decreased or late payments may cause delay in the case of weak contractors without adequate resources.
This factor was ranked the tenth by Egemen and Mohammed (2005), in their study in Cyprus, out of eighteen factors, with RI = 0.571. This is a low importance RII compared to the result in this research which is RII = 0.921, although the markets are similar in both Cyprus and Gaza Strip being small and competitive.

The "strength of contractor site team – (quantity)" was ranked the second by clients' respondents, with RII = 0.876. This factor was ranked the second because the general management of any project requires adequate number of personnel to monitor the different activities and provide backup regarding the general progress of the project. Managing the different procurement of the resources will give better exploitation and optimum use of materials and equipment. This can't be achieved without enough personnel with adequate qualifications.

Regarding *performance* this factor was ranked the fourth by clients' respondents, with RII = 0.641. This rank is around the average of this group, but it is generally low as the scores of other factors within this group. This means that the number of personnel hired by the contractors in the construction projects' sites is not enough and the resources' allocation must be studied carefully and the selection of the number and positions must be based on the adopted allocation approach of resources.

It was found by Soetanto *et al.* (2001) that "strength of contractor site team – (quantity)" was ranked the third in UK by clients, with RI = 8.00 and this result is close to the results of this research regarding *importance*. Regarding *performance*, this factor was ranked the seventh, with RI = 6.838 and this is also close to our results. This factor was perceived with less importance for clients in Singapore, compared to our results, and regarding satisfaction the expectations were not met. (Ling and Chong, 2005)

The clients' respondents ranked "manpower management (quantity and quality of craft operatives)" in the third place, with RII = 0.873 which is so close to the results of the previously discussed factor. This is reasonable because the human resource is one of the major types of resources, through which the contractors can manage all other resources. The quality and quantity of the operatives are very important to achieve the best *performance* during implementation. Regarding *performance*, this factor was ranked the fifth by clients' respondents, with RII = 0.638. This is about 20% less than the implied *importance*. A lot of improvement is needed regarding this issue to meet the clients' expectations. The professional skills of the craft operatives shall be improved through enhanced hiring procedures, training, and workshops. This will guarantee higher level of workers' skills. This factor was also perceived important for clients in Singapore, without achieving the expected performance. (Ling and Chong, 2005)

The factor "manpower management (quantity and quality of craft operatives)" was ranked the second by Soetanto *et al.* (2001), with RII = 8.135. Regarding *performance*, Soetanto *et al.* (2001) found that this factor was ranked the fifth, with RI = 6.865. Both results were close to the results of this research.

The least important factor was "contractor's familiarity with local suppliers, labors, etc.". This factor was ranked the tenth by clients' respondents with respect to the implied *importance*, with RII = 0.783. This factor was expected to have more *importance*. The familiarity with local practices regarding suppliers and labors can decrease time wasted during implementation; through knowing the source of different supplies either materials or consumables. This can also decrease the costs of the different supplies needed for implementation. Although this factor was perceived least important for clients in Gaza, Egemen and Mohammed (2005) found that clients in Northern Cyprus perceived it even less important with RI = 0.468.

Regarding *performance*, clients' respondents ranked the factor "contractor's familiarity with local suppliers, labors, etc." in the second place, with RII = 0.657. This indicates that it is one of the factors relatively performed well compared to other factors in this group. This factor was ranked the fourteenth with respect to the *importance* out of eighteen

factors listed by Egemen and Mohammed (2005) in their study in Cyprus, with RI = 0.468. This result is different compared to the results of this research. Although this factor was ranked the tenth in this thesis but the RII was 0.783. This indicates more *importance* of this factor in the construction market in Gaza Strip.

The other least important factor was "management and co-ordination of subcontractors and suppliers". This factor was ranked the ninth by clients" respondents regarding *importance*, with RII = 0.834. This factor was expected to have more *importance*; because co-ordination of suppliers and sub-contractors will highly improve the resources allocation. None of the sub-contractors will face shortages in any of the required resources. This will save time and money. Regarding *performance*, this factor was ranked the sixth by clients' respondents, with RII = 0.626. This index is approximately equal to the average of the group. This indicates the required improvement regarding this factor.

Unlike our results, Soetanto *et al.* (2001) found that this factor was ranked the first within its group in The UK, with RI = 8.368, and regarding *performance* this factor was ranked the third, with RI = 6.974. This indicates dissatisfaction with the *performance* with respect to coordination between suppliers and sub-contractors in the UK field of construction industry.

The other factors in this group were moderately ranked, i.e. around the average of the different factors in this group. "Material management" was ranked the fourth by clients' respondents, with RII = 0.870. This indicates that the *importance* of this factor is not based on the quantities of the supplied materials, but the clients care about the quality of the materials and the adherence to the specifications. This factor was ranked the sixth within its group by clients in the study by Soetanto *et al.* (2001) in The UK, with RI = 7.342. Regarding *performance*, this factor was ranked in the seventh place, with RII = 0.620. This factor was ranked the second by clients regarding *performance* in the study of Soetanto *et al.* (2001), with RI = 7.105. This factor was ranked ninth by Maloney (2002) in his study considering clients' perceptions in the USA, and it obtained 67% importance.

"Type of plant and equipment available and suitability of the equipment" was ranked the fifth regarding *importance* by clients' respondents, with RII = 0.854. This factor is

moderately important because the equipment must accommodate with the type of the project, and at the same time the equipment must be in a good status. This factor was ranked the twelfth in the study of Egemen and Mohammed (2005) in their study in Cyprus, with RI = 0.545 and this is different from the results of this research. This factor obtained higher *importance* in this study than the obtained by Egemen and Mohammed (2005). Regarding *performance*, this factor was ranked the third, with RII = 0.654 by clients' respondents. This means that a lot of improvement also required in this factor.

The last three factors were ranked in the sixth place by clients' respondents, with RII = 0.842 regarding the implied *importance*. These factors were "equipment and plant management", "payment to subcontractors and suppliers (on time)", and "concern/awareness for environmental issues". These three factors were ranked around the average RII of the whole group. These factors are with considerable *importance* in the construction project. Managing the plant and equipment can guarantee finishing the activities within time through managing the number of equipment and the working hours in the site. Arranging the payments for sub-contractors and suppliers gives no opportunity for late deliveries of works and supplies.

Finally, awareness of environmental issues became a major need for all donors and the agreements usually define special guidelines according to the type of project implemented. The factors mentioned before was ranked by Soetanto *et al.* (2001) as: the seventh for "equipment and plant management" with RI = 7.231, the fifth for "payment to subcontractors and suppliers (on time)" with RI = 7.378, and the fourth for "concern/awareness for environmental issues" with RI = 7.513 respectively. This indicates that these factors were approximately with the same scores of RI with little differences, and this is similar to the results of this research. The factor "payment to subcontractors and suppliers (on time)" was perceived with less importance for clients in Singapore and regarding satisfaction the expectations were not met. (Ling and Chong, 2005)

Regarding *performance*, these factors were ranked respectively the first for "equipment and plant management" with RII = 0.690, the ninth for "payment to subcontractors and suppliers (on time)" with RII = 0.573, and finally the tenth for "concern/awareness for

environmental issues" with RII = 0.509. The study by Soetanto *et al.* (2001) in The UK revealed that regarding *performance* for the perception of clients these factors were ranked as: the fourth for "equipment and plant management" with RI = 6.949, the seventh for "payment to subcontractors and suppliers (on time)" with RI = 6.838, and the sixth for "concern/awareness for environmental issues" with RI = 6.846 respectively. Also the contractors' *performance* regarding those factors required improvements in the field of construction industry in The UK.

4.2.4.2 Consultants' perception regarding the satisfaction factors in the resources management

Table 4.11 illustrates the consultants' perception regarding the resources management.

Table 4.11: consultants' perception regarding importance and performance in the resources management.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Maximum resources and financial capabilities.	0.890	1	0.620	7
Strength of contractor site team (i.e. quantity).	0.870	2	0.660	5
Material management.	0.860	3	0.620	7
Manpower management (quantity and quality of craft operatives).	0.860	3	0.690	1
Equipment and plant management.	0.860	3	0.670	2
Management and co-ordination of subcontractors and suppliers.	0.810	6	0.670	2
Concern/awareness for environmental issues.	0.810	6	0.460	10
Type of plant and equipment available and suitability of the equipment.	0.790	8	0.650	6
Payment to subcontractors and suppliers (on time).	0.780	9	0.580	9
Contractor’s familiarity with local suppliers, labors, etc.	0.740	10	0.670	2
Average	0.827		0.629	

The most important factor from the perception of consultants was found to be "maximum resources and financial capabilities". This factor was ranked the first by consultants' respondents, with RII = 0.890. This will result a reliable time schedule and plan of work during implementation. Regarding *performance*, the consultants' respondents ranked this

factor in the seventh place, with RII = 0.620. In the recent years, contracting companies adopted an approach in providing the required equipment. The approach is based on hiring the needed equipment for the period of project or upon need. This was due to the weak financial capabilities of contractors. The contractors used to have their own equipment most of the time available all the time without additional expenses. This could save time and money. Consultants in Northern Cyprus perceived less importance for this factor as discussed by Egemen and Mohammed (2005).

The second most important factor from the perception of consultants was "strength of contractor site team (i.e. quantity)", with RII = 0.870. The adequate number of staff members means better performed activities through tasks distribution, better flow of information, and by the way improved satisfaction. Regarding *performance*, "strength of contractor site team (i.e. quantity)" was ranked the fifth by consultants' respondents, with RII = 0.660. This coincides with the results obtained by Soetanto *et al.* (2001) in the UK. This factor was ranked the first, with RI = 8.207 regarding *importance* and was ranked the first regarding *performance*, with RI = 7.897.

Three factors were ranked in the third place by consultants' respondents with RII = 0.860. These factors were "material management", "manpower management (quantity and quality of craft operatives)", and "equipment and plant management". The first factor "material management" was ranked the seventh regarding *performance*, with RII = 0.620, which is about 25% less than the implied *importance*. The second factor "manpower management (quantity and quality of craft operatives)" was ranked the first regarding *performance*, with RII = 0.690. The last factor "equipment and plant management" was ranked the second, with RII = 0.670. These factors were ranked the sixth, the third and the fifth with RI = 7.414, RI = 8.069, and RI = 7.567 respectively regarding *importance* by Soetanto *et al.* (2001). These results are close to the results in this research.

The least important factor was "contractor's familiarity with local suppliers, labors, etc.". This factor was ranked the tenth, with RII = 0.740 regarding *importance*. This factor was considered relatively important with respect to other factors in the same group. Regarding *performance*, the "contractor's familiarity with local suppliers, labors, etc." was ranked the second, with RII = 0.670. It appears that this RII is less than the implied *importance*

as the other factors. This factor was found to be even less important to consultants in Northern Cyprus by Egemen and Mohammed (2005) with RI = 0.388.

The second least important factor was "payment to subcontractors and suppliers (on time)". This factor was ranked the ninth, with RII = 0.780. The consultants implied more *importance* to management and coordination of the subcontractors and suppliers. Regarding *performance*, "payment to subcontractors and suppliers (on time)" was ranked the ninth by consultants' respondents, with RII = 0.580, i.e. 20% less than the implied *importance*.

The "type of plant and equipment available and suitability of the equipment" was ranked the eighth by consultants' respondents with a difference of 0.01 regarding the RII from the previous factor. This factor got an RII = 0.790. Regarding *performance*, the "type of plant and equipment available and suitability of the equipment" was ranked the sixth, with RII = 0.650. This indicates that contractors are not providing the adequate equipment that suits the type of work and activities. Consultants in Northern Cyprus perceived this factor less important, with RI = 0.756. (Egemen and Mohammed, 2005)

The last two factors "management and co-ordination of subcontractors and suppliers" and "concern/awareness for environmental issues" were ranked in the sixth place regarding *importance* by consultants' respondents, with RII = 0.810. These two factors were ranked around the average of the whole group regarding importance. Although these two factors were ranked the same regarding *importance*, but this was not the case regarding *performance*. The first factor, "management and co-ordination of subcontractors and suppliers" was ranked the second by consultants' respondents, with RII = 0.670, and the second factor "concern/awareness for environmental issues" was ranked the tenth, with RII = 0.460 with respect to *performance*. This is 35% less than the implied *importance*. The environmental issues are rarely considered in the local market of construction.

"Management and co-ordination of subcontractors and suppliers" was ranked the most *important* by consultants, with RI = 8.633, and regarding *performance*, this factor was ranked the sixth, with RI = 6.700 in the study of Soetanto *et al.* (2001). The other factor

"concern/awareness for environmental issues" was ranked the last regarding *importance*, with RI = 7.400 and regarding *performance*, with RI = 6.667 by Soetanto *et al.* (2001).

4.2.4.3 Comparison between clients' and consultants' perception regarding the resources management

Clients and consultants agreed on that the availability of "maximum resources and financial capabilities" was important and the performance provided needs improvement. The factor "strength of contractor site team (i.e. quantity)" was perceived with the same rank and approximately with the same RII regarding both importance and performance for clients' and consultants' respondents.

The factor "contractor's familiarity with local suppliers, labors, etc." was perceived more important by consultants than perceived by clients. Clients implied more importance than consultants regarding "payment to subcontractors and suppliers (on time)".

The "type of plant and equipment available and suitability of the equipment" was perceived more important to clients than to consultants, but they both agreed that improvement is required regarding this factor.

Both clients and consultants perceived that "management and co-ordination of subcontractors and suppliers" was important and needs improvement but clients were more satisfied.

The perceptions of clients and consultants are close to each other in general, as shown in Table 4.12. The ranking also is similar except some differences. Both clients and consultants implied *importance* to this group. The average RII in the case of clients is 0.854 and in the case of consultants is RII = 0.827. Regarding *performance*, clients gave this group an average RII of 0.621 and consultants gave it 0.629. Some important factors need to be improved by the contractors. Generally, the contractors' teams, equipment and financial capabilities should be either improved or sufficiently allocated during the different phases of implementation. As in the groups discussed before, the factors in this group shall be improved.

In general it can be noticed in Table 4.12 that when using the independent samples t-test that p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.12: Comparison between average RIIs and correlation between clients and consultants regarding resources management using independent samples t-test.

Group	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
Resources management	0.854	0.827	4.269	4.135	1.197	**0.234**
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.621	0.629	3.106	3.145	-0.247	**0.805**

4.2.5 Group 5: Site personnel

This group includes eleven factors. These factors discuss the site personnel recruited by the contractor. The included satisfaction statements consider many related issues, such as: coordination and cooperation with the clients' representatives, staff abilities, technical and managerial qualifications, and commitment of all staff members. This section includes three sub-sections. The first discusses the clients' perception and the second discusses the consultants' perception. A third sub-section will summarize the results and describe differences.

4.2.5.1 Clients' perception regarding importance and performance in the site personnel factors

Table 4.13 discusses the clients' perception regarding the contractors' staff available in any construction site in Gaza local field of construction.

Table 4.13: Clients' perception regarding importance and performance in the site personnel.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Project manager performance and adequacy of authority.	0.901	1	0.643	8
Availability of highly qualified technical staff in the contractor's firm.	0.900	2	0.656	7
Availability of highly qualified managerial staff in the contractor firm.	0.894	3	0.638	10
Skills of the contractor's work supervisors.	0.886	4	0.690	2
Individuals' performance and abilities.	0.885	5	0.689	3
Skills of the contractor's workers.	0.866	6	0.717	1
Co-operation with client (i.e. client representative).	0.859	7	0.669	5
Commitment of the contractor's employee to set goals.	0.857	8	0.663	6
Commitment of contractor's subcontractors.	0.856	9	0.640	9
Capacity of contractor's workers for cooperation.	0.828	10	0.686	4
Site manner (i.e. no loud noises and swearing).	0.769	11	0.565	11
Average	0.864		0.66	

The clients' respondents perceived that the most important factor in this group was the "project manager performance and adequacy of authority". This factor was ranked the first, with RII = 0.901. The clients implied *importance* for the project manager's capabilities and the authority given to him in the site. This will speed up the process in the site and make it more flexible. Regarding *performance*, the "project manager performance and adequacy of authority" was ranked the eighth, with RII = 0.643. This factor was one of the least satisfactorily performed. It must be considered that the differences between the RIIs of satisfaction were small. The *importance* implied by clients' respondents is about 25% above the provided *performance*. This factor was ranked as the most important factor in the study of Soetanto *et al.* (2001) in The UK, with RI = 8.641. That indicates the *importance* of this factor in other developed markets.

The "availability of highly qualified technical staff in the contractor's firm" was ranked the second by clients' respondents regarding *importance*, with RII = 0.900. The third important factor was "availability of highly qualified managerial staff in the contractor

firm" from the perception of clients' respondents, with RII = 0.894. These results are almost equal to the previously discussed factors. These two factors indicate the *importance* of the technical and managerial qualifications of contractors' staff. Cumulative experience with highly qualified staff members improves the clients' satisfaction. This gives better chances for contractors to obtain future opportunities.

Regarding *performance*, the two factors were inappropriately performed as expected by clients. The clients' respondents ranked the "availability of highly qualified technical staff in the contractor's firm" in the seventh place, with RII = 0.656, and the "availability of highly qualified managerial staff in the contractor firm" was ranked in the tenth place, with RII = 0.638. Both RIIs are about 15% less than the implied *importance*. These are major factors, and dissatisfaction regarding these factors requires special attention and urgent improvement. Egemen and Mohammed (2005) found that clients ranked "availability of highly qualified technical staff in the contractor's firm" in the sixth place out of eighteen factors, with RI = 0.684, and the "availability of highly qualified managerial staff in the contractor firm" in the thirteenth place, with RI = 0.534. This factor was ranked the tenth by clients in the USA and obtained 65% importance in the study of Maloney (2002).

The least important factors perceived by clients' respondents were respectively "Site manner (i.e. no loud noises and swearing)" in the eleventh place with RII = 0.769, "capacity of contractor's workers for cooperation" in the tenth place with RII = 0.828 and "Commitment of contractor's subcontractors" with RII = 0.856. These factors although ranked least important, but depending on the RIIs implied they appear to be important. That is the least important factor as ranked appears to be important with RII = 0.769. This is clear also through the average RII of the group shown in Table 4.13.

The "site manner (i.e. no loud noises and swearing)" was ranked as the least important factor, because noise is always available in any construction site, and at the same time it doesn't affect the principal measures from the perception of the client. This factor was ranked the last in its group in the study of Soetanto *et al.* (2001), with RI = 8.128. Regarding *performance*, the "Site manner (i.e. no loud noises and swearing)" was ranked also in the eleventh place, with RII = 0.565, i.e. about 20% less than the implied

importance. Soetanto *et al.* (2001) found that this factor was ranked in the second place, with RI = 7.769. Although the ranks are higher, but the RI is less than implied which coincides with our results.

Regarding *performance*, the other two least important factors, was ranked the fourth for "Capacity of contractor's workers for cooperation", with RII = 0.686, and the ninth for "Commitment of contractor's subcontractors", with RII = 0.64. As for all other factors in this group, these factors were relatively important, but the *performance* is 20% less than the implied *importance* in average.

The remaining factors have acquired relative *importance* from the perception of clients. The "Skills of the contractor's work supervisors" was considered *important* from the perception of clients. This factor was ranked the fourth, with RII = 0.886. Regarding *performance*, "Skills of the contractor's work supervisors" was ranked the second, with RII = 0.690. This factor was ranked the third regarding *performance* out of 22 factors by Kärnä (2004) and was ranked the first out of three within its group.

The "Individuals' performance and abilities" was ranked the fifth regarding *importance* and third regarding *performance* by clients respondents and its results were very close to the previous factor. Clients' respondents gave this factor an RII = 0.885 regarding *importance* and RII = 0.689 regarding *performance*. This factor was ranked the third within its group in the study by Soetanto *et al.* (2001), with RI = 8.256 and it is close to the results of this research. Regarding *performance*, this factor was also ranked the third by Soetanto *et al.* (2001), with RI = 7.692. This indicates also inappropriate *performance* in The UK as in this research.

"Skills of the contractor's workers" was ranked the sixth by clients' respondents, with RII = 0.717. Most of the workers were working for the Israelis in the occupied land of Palestine, usually with high standards of *performance*. It was expected that the satisfaction regarding this factor was more. The last two factors "co-operation with client (i.e. client representative)" and "commitment of the contractor's employee to set goals" were respectively ranked the seventh with RII = 0.859 and the eighth with RII = 0.857 regarding *importance*. Regarding *performance*, these two factors were ranked the fifth

with RII = 0.669 and sixth with RII = 0.663 respectively by clients' respondents. The first factor, “co-operation with client (i.e. client representative)” was ranked the second with RI = 8.590 by clients in the study by Soetanto *et al.* (2001), and at the same time this factor was ranked first regarding *performance*, with RI = 8.026 by clients in the same study. This is so close to the results of this research. On the other hand, “commitment of the contractor’s employee to set goals” was ranked the third out of three factors within its group and the eleventh out of twenty factors as a whole regarding *performance* in the study of Kärnä (2004).

4.2.5.2 Consultants' perception regarding importance and performance in the site personnel factors

Table 4.14 describes the consultants' perception regarding the site personnel issues. The results, in average for the whole group, are close to the results in the case of clients. The most important factor was found to be the "skills of the contractor’s work supervisors". This factor was ranked the first by consultants' respondents, with RII = 0.905. The consultants implied *importance* for the supervisors as the link between workers and other technical and managerial personnel. The provided *performance* was 20 % less than the implied *importance* for this factor. The consultants' respondents ranked this factor in the second place regarding *performance*, with RII = 0.690. This indicates that contractors' work supervisors are required to be aware of the consultants' requirements regarding the implementation standards.

Table 4.14: Consultants' perception regarding importance and performance in the site personnel.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Skills of the contractor’s work supervisors.	0.905	1	0.69	2
Individuals' performance and abilities.	0.9	2	0.67	3
Availability of highly qualified managerial staff in the contractor firm.	0.89	3	0.62	9
Availability of highly qualified technical staff in the contractor’s firm.	0.88	4	0.61	10
Commitment of the contractor’s employee to set goals.	0.88	4	0.64	6
Project manager performance and adequacy of authority.	0.86	6	0.65	4
Skills of the contractor’s workers.	0.86	6	0.72	1

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Co-operation with client (i.e. client representative).	0.84	8	0.63	7
Commitment of contractor's subcontractors.	0.83	9	0.63	7
Capacity of contractor's workers for cooperation.	0.79	10	0.65	4
Site manner (i.e. no loud noises and swearing).	0.72	11	0.51	11
Average	**0.85**		**0.638**	

The "individuals' performance and abilities" was ranked the second by consultants' respondents regarding *importance*, with RII = 0.900. This indicates the specific care of consultants about the role of each person in the site, and his abilities to perform his duties and tasks. Regarding *performance*, consultants' respondents ranked "individuals' performance and abilities" in the third place with RII = 0.670. This coincides with the perception of clients regarding *performance*. This factor was ranked the second within its group by consultants in the study of Soetanto *et al.* (2001), with RI = 8.567. This is less than the *importance* implied by consultants in Gaza. Regarding *performance* in the same study consultants ranked the same factor in the second place, with RI = 7.733 which is less than the implied *importance* in The UK and this indicates dissatisfaction. (Soetanto *et al.* 2001)

The third important factor was "availability of highly qualified managerial staff in the contractor firm". This factor was ranked the third, with RII = 0.890 by consultants' respondents. Regarding *performance*, this factor was ranked the seventh, with RII = 0.620. Consultants in Northern Cyprus perceived this factor less important with RI = 0.792. (Egemen and Mohammed, 2005)

The "availability of highly qualified technical staff in the contractor firm" and "Commitment of the contractor's employee to set goals" came in the fourth place, with RII = 0.880 from the perception of consultants. This indicates that the consultants care about the lowest level of personnel carrying implementation in the site and the individual abilities. The importance perceived for this factor is the same as obtained by Egemen and Mohammed (2005) in their study in Northern Cyprus. Regarding *performance*, these two

factors were ranked the tenth, with RII = 0.610 and the sixth with RII = 0.640 respectively.

The least important factor was "site manner (i.e. no loud noises and swearing)", which was ranked the eleventh by consultants' respondents, with RII = 0.720 regarding *importance*. Regarding performance, this factor was ranked also the eleventh, with RII = 0.510. This is for the reason that the site manner doesn't affect the progress or quality of work. This factor was ranked the last within its group in the study of Soetanto *et al.* (2001) for both *importance* with RI = 7.724 and *performance* with RI = 7.414, and that coincide with the results of this research.

Another least important factor was "capacity of contractor's workers for cooperation". This factor was ranked the tenth by consultants' respondents regarding *importance*, with RII = 0.790. The cooperation is not direct between consultants and workers so this is not a major requirement by the consultants in the site. On the other hand, this factor was ranked the fourth regarding *performance*, with RII = 0.650. This means that workers shall be more cooperative with the consultants in the site.

The "commitment of contractor's subcontractors" was ranked the ninth by consultants' respondents, with RII = 0.830. This factor is considered important based on its RII.

Consultants' respondents considered "co-operation with client (i.e. client representative)" moderately important, and ranked it in the eighth place, with RII = 0.840, while the consultant is the clients' representative, the consultant will make use of this willing for cooperation. This factor was ranked in the third place regarding *importance* by consultants in The UK by Soetanto *et al.* (2001), with RI = 8.500, and in the first place with RI = 7.833 regarding *performance*.

The last two factors were "project manager performance and adequacy of authority" and "skills of the contractor's workers" were ranked in the sixth place, with RII = 0.860, regarding *importance*. The first factor, "project manager performance and adequacy of authority", was ranked the fourth regarding *performance*, with RII = 0.650, which is 20% less than the implied *importance*. In UK, Soetanto *et al.* (2001) found that consultants

ranked this factor in the first place, with RI = 8.600 regarding *importance* and this value coincide with the result of this research. Regarding satisfaction with the provided *performance*, Soetanto *et al.* (2001) found that this factor was ranked the third within its group, with RI = 7.600, which is higher than the value obtained in this research. The second factor, "skills of the contractor's workers", was ranked the first regarding *performance* by consultants' respondents, with RII = 0.720.

4.2.5.3 Comparison between clients' and consultants' perceptions regarding site personnel

Both clients and consultants agreed regarding the importance of the "availability of highly qualified managerial staff in the contractor firm". The factor "Site manner" was perceived by clients and consultants as the least important and the least satisfactorily performed by contractors. The "commitment of contractor's subcontractors" was perceived important for both clients and consultants; to enable efficient progress of work. The clients implied more importance for the role of project manager and the skills of workers than implied by consultants. The need for improvement was agreed by both clients and consultants regarding the skills of workers.

The two perceptions in average were close to each other, regarding *importance* and *performance*. As shown in Table 4.15, clients appeared to imply more *importance* to this group than consultants. Regarding *performance*, clients appeared to be more satisfied. As in the previous groups, improvement is required by contractors regarding their personnel. The skills, abilities and attitudes must be considered during the selection. A general policy in dealing with clients and consultants must be agreed within each contracting firm.

In general it can be noticed in Table 4.15 that when using the independent samples t-test that p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.15: Comparison between average RIIs and correlation between clients and consultants regarding site personnel using independent samples t-test.

Group	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
Site personnel	0.839	0.837	4.319	4.248	0.718	**0.475**
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.654	0.623	3.301	3.191	0.665	**0.508**

4.2.6 Group 6: Variations, drawings and handing over

This section will discuss the clients' and consultants' perceptions regarding the detailed activities during the implementation phase. These activities include the adopted variations and the related drawings and actions. The activities investigated also include the contribution to the design and shop drawings for a specified project.

4.2.6.1 Clients' perception regarding the variations, drawings and handing over

Table 4.16 shows the results regarding site personnel issues from the perception of clients.

Table 4.16: Clients' perception regarding importance and performance in the Variations, drawings and handing over.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Completion stage, finishing and ease of handing over and settlement of final account.	0.89	1	0.683	3
Processing variations (e.g. speed, flexibility).	0.887	2	0.646	7
Smoothness of operation and hand-over.	0.874	3	0.679	4
Completion of defects. (speed and quality)	0.863	4	0.693	2
Agreement about changes and processing variations with speed and flexibility.	0.854	5	0.626	8
Preparation of shop drawings and as-built drawings.	0.854	5	0.649	5

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Contribution to development of design drawings.	0.837	7	0.697	1
Quality of hand-over documentation (O&M manual, H&S).	0.811	8	0.649	6
Average	0.859		0.665	

All of the listed factors hadn't any RII less than 0.8. The most important factor in this group from the perception of clients' respondents was "completion stage, finishing and ease of handing over and settlement of final account". This factor was ranked first, with RII = 0.890, regarding *importance*. That indicates the clients' care about the final result of the project more than other earlier stages. Clients' respondents ranked this factor in the third place, with RII = 0.683. This indicates that the process of handing over required enhanced procedures to meet the clients' requirements regarding this issue. Soetanto *et al.* (2001) found that this factor was ranked the fourth by clients' respondents, with RI = 8.385, and regarding *performance* this factor was ranked the second, with RI = 7.513. That means the inadequacy of the provided *performance* also in The UK.

The second factor was "processing variations (e.g. speed, flexibility)". This factor got RII = 0.887 by clients respondents regarding *importance*. Regarding *performance*, this factor was ranked the seventh, with RII = 0.646. That indicates that faster processing of variations according to the type of activity is required from contractors. This factor was ranked in the first place within its group regarding *importance* and also required improvement in the study of Soetanto *et al.* (2001) in The UK.

The least important factor in this group was "quality of hand-over documentation (O&M manual, H&S)". The clients' respondents ranked this factor in the eighth place regarding *importance*, with RII = 0.811. The *performance* was about 15% less than implied *importance*. Clients' respondents ranked this factor the sixth, with RII = 0.649. It is clear that although this factor was ranked last, but it still appears to be important. This factor was ranked the third regarding *importance* in the study of Soetanto *et al.* (2001), with RI = 8.462, and regarding *performance*, this factor was ranked the fifth, with RI = 7.103 in the same study.

"Contribution to development of design drawings" was ranked the seventh by clients' respondents, with RII = 0.837. Regarding *performance*, this factor was found to have the first rank, with RII = 0.697 by clients' respondents. This factor was found to be the least important and the least satisfactorily performed in the study of Soetanto *et al.* (2001) in The UK.

The remaining factors were ranked around the average RII of this group. "Smoothness of operation and hand-over" was ranked the third, with RII = 0.874 regarding *importance*, and was ranked the fourth, with RII = 0.679 regarding *performance*. This is the same *importance* obtained by Soetanto *et al.* (2001) according to the RI value, but it was ranked first in this study. Regarding *performance*, this factor was also ranked first, but with RI = 7.614 in the same study, which indicated dissatisfaction.

The "completion of defects - (speed and quality)" was ranked the fourth by clients respondents, with RII = 0.863, and regarding *performance* this factor was ranked the second with RII = 0.693. Soetanto *et al.* (2001) found that this factor was ranked the second with RI = 8.692, which is close to the result of this research. In the same study, Soetanto found that this factor was ranked in the sixth place regarding *performance*, with RI = 6.949 which is also similar to the results of this study. Clients in Singapore implied less importance for this factor, but it was ranked the second within its group. Regarding the satisfaction, completing the defects was one of the least satisfactorily performed unlike obtained in our results. (Ling and Chong, 2005)

The last two factors "agreement about changes and processing variations with speed and flexibility" and "preparation of shop drawings and as-built drawings" was ranked the fifth, with RII = 0.854 regarding *importance*. Regarding *performance*, the two factors were ranked the eighth for "agreement about changes and processing variations with speed and flexibility" with RII = 0.626, and the fifth for "preparation of shop drawings and as-built drawings" with RII = 0.649 respectively.

The first factor "agreement about changes and processing variations with speed and flexibility" was found by Kärnä (2004) to be less important in Finland than found in our

research. For "preparation of shop drawings and as-built drawings" Soetanto *et al.* (2001) found that this factor was less important than the *importance* implied by respondents of this research. This factor was perceived with less importance in Singapore than perceived by clients in Gaza Strip, but it had better level of performance, although the expected performance was not met. (Ling and Chong, 2005)

4.2.6.2 Consultants' perception regarding the variations, drawings and handing over

The consultants in average implied more *importance* for this group than that implied by clients. Table 4.17 illustrates that the consultants considered "smoothness of operation and hand-over" as the most important factor in this group, with RII = 0.920. The consultants' satisfaction with the *performance* regarding this factor was about 27% less than the implied *importance*. The consultants' respondents ranked this factor in the second place regarding *performance*, with RII = 0.650. In the study by Soetanto *et al.* (2001) this factor was ranked the first by consultants in The UK, with RI = 8.400, and regarding *performance* the consultants ranked this factor the fourth, with RI = 6.800. The consultants appeared to care about the whole process to be smooth more than the final stage of implementation.

Table 4.17: Consultants' perception regarding importance and performance in the Variations, drawings and handing over.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Smoothness of operation and hand-over.	0.92	1	0.65	2
Completion stage, finishing and ease of handing over and settlement of final account.	0.89	2	0.61	6
Processing variations (e.g. speed, flexibility).	0.88	3	0.63	3
Preparation of shop drawings and as-built drawings.	0.86	4	0.61	6
Completion of defects. (speed and quality)	0.86	4	0.66	1
Agreement about changes and processing variations with speed and flexibility.	0.85	6	0.63	3
Contribution to development of design drawings.	0.85	6	0.62	5
Quality of hand-over documentation (O&M manual, H&S).	0.84	8	0.6	8
Average	0.869		0.626	

"Completion stage, finishing and ease of handing over and settlement of final account" was ranked the second regarding *importance* by consultants' respondents, with RII = 0.890. The consultants ranked the "Completion stage, finishing and ease of handing over and settlement of final account" in the sixth place regarding satisfaction with the contractors' *performance*, with RII = 0.610. The study by Soetanto *et al.* (2001) revealed that the "Completion stage, finishing and ease of handing over and settlement of final account" was ranked the second regarding *importance* with RI = 8.379, and was ranked the first regarding *performance*, but with RI = 7.207.

The least important factor from the perception of consultants was "quality of hand-over documentation (O&M manual, H&S)". This factor was ranked the eighth regarding *importance*, with RII = 0.840, and was ranked also in the eighth place regarding *performance* provided by contractors, with RII = 0.600 which means dissatisfaction. Soetanto *et al.* (2001) found that in The UK this factor was ranked the third with RI = 8.207 regarding *importance*, and was ranked the second with RI = 7.103 regarding *performance*.

The "contribution to development of design drawings" and "agreement about changes and processing variations with speed and flexibility" were both ranked in the sixth place regarding *importance*, with RII = 0.850. Regarding the *performance* provided by contractors, the two factors were ranked the fifth with RII = 0.620 for "contribution to development of design drawings" and ranked the third regarding *performance*, with RII = 0.630. The "contribution to development of design drawings" obtained less *importance* in the study by Soetanto *et al.* (2001). This factor was ranked the eighth with RI = 7.036 regarding *importance*, and regarding *performance* it was ranked the seventh, with RI = 6.0 in the same study.

The last two factors "preparation of shop drawings and as-built drawings" and "completion of defects - (speed and quality)" were ranked the fourth regarding *importance*, with RII = 0.860. Regarding *performance*, the "preparation of shop drawings and as-built drawings" was ranked the sixth with RII = 0.610, and "completion of defects - (speed and quality)" was ranked the first with RII = 0.660 respectively. Soetanto *et al.* (2001) found that the "preparation of shop drawings and as-built drawings" was ranked

the seventh for both *importance* with RI = 7.444 and for *performance*, with RI = 6.000. Regarding "completion of defects - (speed and quality)", it was found that this factor was ranked the first regarding *importance* with RI = 8.400, and the fourth regarding *performance*, with RI = 6.800.

4.2.6.3 Comparison between clients' and consultants' perceptions regarding variations, drawings and handing over

"Completion stage, finishing and ease of handing over and settlement of final account" obtained the same importance by clients and consultants. That indicates that both clients and consultants agree on the importance of the final stage of the implementation of any construction project. Consultants' respondents seemed to be less satisfied than clients regarding the contractors' performance.

The factors "contribution to development of design drawings" and "quality of hand-over documentation (O&M manual, H&S)", coincided in their results for clients and consultants. The consultants implied more importance and appeared to be less satisfied than the clients.

It is clear through Table 4.18 that the group of variation, drawings and handing over was important from the perception of both clients and consultants. This is obvious through the average values of RII which is 0.859 for clients and 0.869 for consultants. None of the mentioned factors obtained less than RII = 0.800 regarding *importance*. Regarding *performance*, the RIIs for both clients and consultants were less than the implied *importance*. All the factors mentioned in this group were found to be in need for improvement, as the other factors in the other groups. Clients appeared to imply less *importance* than consultants in this group. The clients were found to be less dissatisfied than the consultants regarding the contractors' *performance*.

In general it can be noticed in Table 4.18 that when using independent samples t-test that p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.18: Comparison between average RIIs and correlation between clients and consultants regarding variations, modifications and handing over using independent samples t-test.

Group	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
Variations, modifications and handing over.	0.859	0.869	4.296	4.344	-0.375	**0.709**
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	client	Consultant		
	0.665	0.626	3.323	3.131	1.025	**0.308**

4.2.7 Group 7: quality of service

This group includes thirteen factors. These factors discuss the quality of service provided by the contractor during the implementation. The factors include different issues like: dealing with complaints, correspondence, speed of service, responsiveness, decision making, commitment, administration, and hospitality. The perceptions of both clients and consultants are discussed regarding these issues in the following sections.

4.2.7.1 Clients' perception regarding quality of service

Table 4.19 illustrates that client respondents considered the factor "ability to make rapid decisions" as the most important factor, with RII = 0.901. The clients' satisfaction with the *performance* regarding this factor was about 27% less than the implied *importance*. This factor was ranked in the eleventh place regarding *performance*, with RII = 0.632, i.e. one of the least satisfactorily performed. Soetanto *et al.* (2001) found that this factor was ranked also the first by clients in The UK, with RI = 8.256, and regarding *performance* this factor was ranked the third, with RI = 7.513. That indicates the *importance* of building trust and reliability between the client and the contractor.

Table 4.19: Clients' perception regarding importance and performance in the quality of service.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Ability to make rapid decisions.	0.901	1	0.632	11
Telephone inquiries and correspondence.	0.887	2	0.663	4
Repairing of defects and deficiencies noticed during handover inspection.	0.873	3	0.706	1
Responsiveness to client.	0.857	4	0.638	9
Commitment of key persons (active and continuous).	0.851	5	0.663	4
Speed and reliability of service.	0.848	6	0.629	12
Information flow in the site.	0.848	6	0.657	6
Deep involvement in the problems and treating them as important request.	0.839	8	0.651	8
Handling of complaints (effectiveness).	0.837	9	0.606	13
Administration.	0.837	9	0.654	7
Providing assistance and direction for completing paperwork.	0.814	11	0.674	3
Corporate hospitality and generosity in dealing with the client and his representatives.	0.771	12	0.693	2
Access of contractor's employee.	0.744	13	0.638	9
Average	0.839		0.654	

The "telephone inquiries and correspondence" was ranked in the second place by clients' respondents, with RII = 0.887. Regarding *performance*, this factor was ranked the fourth, with RII = 0.663. This clarifies the *importance* of documentation and record keeping during implementation. Unlike our results, Soetanto *et al.* (2001) found that this factor was not so important for clients. "Telephone inquiries and correspondence" was ranked the sixth with RI = 7.706 regarding *importance*, and also was not satisfactorily performed.

"Repairing of defects and deficiencies noticed during handover inspection" was ranked the third by clients' respondents, with RII = 0.873. Clients ranked this factor in the first place regarding *performance*, with RII = 0.706. This means that the hand over inspection has the most *importance* from the perception of clients due to the desire of closing out the project without any defects before the contractor leaves the site. This factor was found to be one of the least important by Al-Momani (2000) in Jordan, which is different from our results, without adequate performance by contractors.

The "responsiveness to client" was ranked the fourth by clients' respondents, with RII = 0.857. Although this factor is important, the contractors didn't provide adequate *performance* regarding this factor. Clients ranked the *performance* in this factor in the ninth place, with RII = 0.638. This factor was ranked the second regarding *importance* by Soetanto *et al.* (2001) in The UK, with RI = 8.744. This factor was perceived important by clients in the UK. The *performance* was less than the implied *importance*, as obtained in this research. Responsiveness to the clients was similarly ranked by clients in Singapore regarding importance and performance. (Ling and Chong, 2005)

The least important factor was "access of contractor's employee". This factor was ranked the thirteenth by clients' respondents regarding *importance*, with RII = 0.744. Regarding *performance*, this factor was ranked the ninth by clients' respondents, with RII = 0.638. This is about 10% less than the implied *importance*. This is justified because of the nature of the construction projects, and the full time interaction between the client or his representative and the contractor. The provided *performance* may have deficiencies in defining duties and responsibilities in the site. This will make it hard for the client to access the meant person for a specific complaint or justification in the site. This factor was ranked the second regarding *importance* in the study by Kärnä (2004) in Finland.

The second least important factor "corporate hospitality and generosity in dealing with the client and his representatives" was ranked the twelfth regarding *importance* by clients' respondents, with RII = 0.771. This factor appears to be not in the clients' priorities, but it was not satisfactorily performed. The clients' respondents ranked the "corporate hospitality and generosity in dealing with the client and his representatives" in the second place regarding *performance*, with RII = 0.693.

This indicates the weakness of the humanitarian side of the relationship between clients and contractors. This factor, "corporate hospitality and generosity in dealing with the client and his representatives", was ranked the last in its group by clients, regarding *performance* in UK in the study of Soetanto *et al.* (2001), with RI = 2.861, and regarding *performance* it was ranked also the last, with RI = 5.472 which is higher than the *importance* in this case although both values are considered low.

The factor "providing assistance and direction for completing paperwork" was ranked the eleventh regarding *importance* by clients' respondents, with RII = 0.714. This factor had more *importance* than expected, because usually each party has his own procedures and forms. The provided *performance* in this factor was less than the implied *importance*. The factor "providing assistance and direction for completing paperwork" was ranked the third, with RII =0.674 by clients' respondents regarding *performance*. This factor is essential for the client orientation and it was considered important according to Ahmed and Kangari (1995).

"Handling of complaints (effectiveness)" and "administration" were ranked the ninth by clients' respondents, with RII = 0.837, regarding *importance*. The *performance* for this factor was about 23% less than the implied *importance*, with RII = 0.606. This factor was ranked last in the thirteenth place, regarding *performance*. This factor was ranked the fifth by Soetanto *et al.* (2001), with RI = 8.135 and regarding *performance* it was ranked also the fifth, but with RI = 7.324. The "administration" was ranked the seventh, with RII = 0.654 regarding *performance* by clients' respondents.

The remaining factors were moderately evaluated with RIIs around the average of the whole group. The "commitment of key persons (active and continuous)" was ranked the fifth, with RII = 0.851. The "speed and reliability of service" and "information flow in the site" were both ranked in the sixth place, with RII = 0.848. The last factor "deep involvement in the problems and treating them as important request" was ranked the eighth, with RII = 0.839. All of these factors were about 20% less than the implied *importance*.

4.2.7.2 Consultants' perception regarding the quality of service

Table 4.20 illustrates that consultants' respondents perceived the factor "repairing of defects and deficiencies noticed during handover inspection". This factor was ranked the first, with RII = 0.880. The *performance* was about 24% less than the implied *importance*. This shall be justified by consultants as well as clients. If they are not satisfied with such *performance*, how are the works accepted?

Table 4.20: Consultants' perception regarding importance and performance in the quality of service.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Repairing of defects and deficiencies noticed during handover inspection.	0.88	1	0.64	4
Commitment of key persons (active and continuous).	0.874	2	0.653	2
Speed and reliability of service.	0.87	3	0.62	7
Telephone inquiries and correspondence.	0.86	4	0.61	8
Responsiveness to client.	0.86	4	0.58	13
Handling of complaints (effectiveness).	0.85	6	0.63	6
Deep involvement in the problems and treating them as important request.	0.85	6	0.65	3
Ability to make rapid decisions.	0.84	8	0.61	8
Providing assistance and direction for completing paperwork.	0.84	8	0.61	8
Information flow in the site.	0.821	10	0.6	11
Administration.	0.81	11	0.64	4
Corporate hospitality and generosity in dealing with the client and his representatives.	0.79	12	0.66	1
Access of contractor's employee.	0.74	13	0.6	11
Average	**0.837**		**0.623**	

"Commitment of key persons (active and continuous)" was ranked in the second place by consultants' respondents, with RII = 0.874, and regarding *performance* this factor was ranked also the second, but with RII = 0.653. This factor was ranked the first in the study by Soetanto *et al.* (2001), with RI = 8.567, and first regarding *performance*, with RI = 8.2. "Speed and reliability of service" was ranked the third by consultants' respondents, with RII = 0.870. Regarding *performance*, this factor was ranked the seventh, with RII = 0.620, i.e. 25% less than the implied *importance*. The "speed and reliability of service" was ranked the third, with RI = 7.800 by consultants in the study of Soetanto *et al.* (2001), and regarding *performance* this factor was ranked the fourth, with RI = 7.200.

The "telephone inquiries and correspondence" and "responsiveness to client" was ranked the fourth, with RII = 0.860, by consultants' respondents. These two factors were also in the group of most important factors for the consultants in this group. The "telephone inquiries and correspondence" was ranked the eighth regarding *performance*, with RII = 0.61, by consultants respondents. This factor was ranked fourth by consultants in the study by Soetanto *et al.* (2001), with RI = 7.667 regarding *importance*, and regarding

performance it was ranked the second, with RI = 7.400. This coincides with the implied *importance* by consultants in our research. The "responsiveness to client" was ranked the thirteenth regarding *performance* by consultants' respondents, with RII = 0.580. This is about 28% less than the implied *importance*. In the study by Soetanto *et al.* (2001), this factor had less *importance* than obtained in our research. It was ranked the sixth by consultants in UK, with RI = 7.633. Regarding *performance* it was also ranked the sixth, but with RI = 7.067.

The least important factor perceived by consultants was "access of contractor's employee". The consultants' respondents ranked this factor in the thirteenth place regarding *importance*, with RII = 0.740. Regarding *performance*, this factor was ranked the eleventh, with RII = 0.600.

The "corporate hospitality and generosity in dealing with the client and his representatives" was ranked the twelfth by consultants' respondents, with RII = 0.790. Regarding *performance*, this factor was ranked in the first place by consultants' respondents, with RII = 0.660. The "corporate hospitality and generosity in dealing with the client and his representatives" was ranked the eighth for both *importance* with RI = 4.115, and *performance* with RI = 5.462, in the study by Soetanto *et al.* (2001) in The UK. This approximately coincides with our results.

"Information flow in the site" and "administration" were ranked the tenth, with RII = 0.821, and the eleventh, with RII = 0.810, respectively. Regarding *performance*, "information flow in the site" was ranked the eleventh with RII = 0.600. "Administration" was ranked the fourth by consultants' respondents, with RII = 0.640. This factor was ranked the fourth regarding *importance,* with RI = 7.667, and the fifth regarding *performance* with RI = 7.100, in the study by Soetanto *et al.* (2001) in The UK.

The factors "handling of complaints (effectiveness)" and "deep involvement in the problems and treating them as important request" were ranked the sixth, with RII = 0.850 by consultants' respondents. Regarding *performance*, it was about 20% less than the implied *importance*. The last two factors in this group "ability to make rapid decisions" and "providing assistance and direction for completing paperwork" were ranked the

eighth, with RII = 0.840 and were about 23% less than the implied *importance* by consultants' respondents.

4.2.7.3 Comparison between clients' and consultants' perceptions regarding the quality of service

The clients' and consultants' perceptions were close to each other regarding importance for "repairing of defects and deficiencies noticed during handover inspection". The two respondents agreed that this factor needs enhancement. The commitment by the key contractors' personnel can overcome any obstacle during implementation, as perceived by clients and consultants. The factor "speed and reliability of service" was perceived more important for consultants than for clients, but it was perceived the most important by both of them. The factors "access of contractor's employee" and "corporate hospitality and generosity in dealing with the client and his representatives" were perceived as the least important factors by both clients and consultants. As illustrated in tables 4.19 and 4.20 the clients and consultants agreed regarding the *importance* of most of the factors mentioned and agreed regarding the least important factors. It was obvious that both clients and consultants agreed regarding the need for improvement for all of the issues in that group.

In general it can be noticed in Table 4.21 that when using independent samples t-test the p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.21: Comparison between average RIIs and correlation between clients and consultants regarding the quality of service using independent samples t-test.

Group	Importance (Ideal)					
	Av. RII		Means		t-value	p-value
	client	Consultant	Consultant	client		
Quality of service	0.839	0.837	4.195	4.185	0.098	**0.922**
	Performance (based on previous experience)					
	Av. RII		Means		t-value	p-value
	client	Consultant	Consultant	client		
	0.654	0.623	3.272	3.114	1.153	**0.252**

4.2.8 Group 8: Attitude

This is the last group in the satisfaction statements. It includes fifteen factors, considering very important issues, such as honesty, reliability, accountability, responsibility, and other issues related to ethics and aesthetics. These factors were perceived important for both clients and consultants as will be discussed in the following subsections.

4.2.8.1 Clients' perception regarding attitude

The most important factor was perceived by clients' respondents to be "honesty and integrity" as shown in Table 4.22. This factor was ranked the first, with RII = 0.913. This indicates the *importance* of giving the client a feeling about the honesty of the contractor in all activities and dealings during the project. This is related to the common culture in the society. Every person in the contractor's team gives an impression about the whole contracting firm. The clients were 28% less satisfied than the implied *importance* for this factor.

Clients' respondents ranked the "honesty and integrity" in the eighth place with RII = 0.637 regarding satisfaction with the contractors' *performance*. In the UK, Soetanto *et al.* (2001) found that "honesty and integrity" was ranked the second, with RI = 8.816 regarding *importance*, and the first with RI = 8.289 regarding *performance*, which is similar to the results of this research regarding dissatisfaction with *performance*, although the difference is less than obtained in this research.

Table 4.22: Clients' perception regarding importance and performance in the attitude.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Honesty and integrity.	0.913	1	0.637	8
Collaborative/spirit of co-operation/teamwork.	0.887	2	0.646	5
Working in harmony with consultant firm.	0.877	3	0.635	9
Treating complaints on completed jobs as priorities.	0.868	4	0.609	12
Communication (to coalition member and site personnel).	0.862	5	0.652	3
Customer focus/proactive to understand client/architect.	0.859	6	0.634	10
Responsibility for their decision.	0.859	7	0.629	11
Keep the client informed/sharing information with architect.	0.856	8	0.64	7

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Avoidance of claims (not claims consciousness).	0.856	8	0.569	15
Proactive attitude towards problems.	0.854	10	0.577	14
Responding quickly to legitimate complaints.	0.851	11	0.609	12
Display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives.	0.848	12	0.649	4
Simplifying procedures to either avoid or overcome complaints.	0.843	13	0.686	1
Offering personal attentions to complaints.	0.831	14	0.66	2
Offering reasonable explanation for complaints.	0.825	15	0.643	6
Average	0.859		0.631	

The second important factor from the perception of clients was "collaborative/spirit of co-operation/teamwork". The clients' respondents ranked this factor in the second place, with RII = 0.887, regarding *importance*. The satisfaction of clients with the *performance* was about 25% less than the implied *importance*. This is a critical factor for contractors to enhance their practice and enforce the concept of cooperation and team work. This factor is essential especially in construction projects. Soetanto *et al.* (2001) found that in The UK, clients ranked "collaborative/spirit of co-operation/teamwork" as the most important factor, with RI = 8.974, but regarding *performance* this factor was ranked the second, with RI = 8.00. This factor was ranked the sixteenth out of twenty five factors regarding importance for clients in the USA in the study by Maloney (2002). This factor was ranked the third within its group by clients in Singapore. This importance is less than implied by clients in Gaza Strip. Regarding *performance*, local clients were less satisfied compared to the study of Ling and Chong (2005).

"Working in harmony with consultant firm" was ranked the third by clients' respondents, with RII = 0.877, regarding *importance*. This indicates that the clients' satisfaction is directly related to consultants' satisfaction by contractors. This factor was ranked the ninth regarding *performance* by clients' respondents, with RII = 0.635. The contractors shall improve their manner of cooperation with consultants and find out, in cooperation between the three parties, the best procedure to achieve cooperation during implementation. Egemen and Mohammed (2005) found that this factor was the least important in their study in Cyprus, with RI = 0.576.

The factor "treating complaints on completed jobs as priorities" was ranked the fourth by clients' respondents, with RII = 0.868. The *performance* provided by contractors was 25% less than the implied *importance*. This factor was discussed by Ahmed and Kangari (1995) in the category of (response to complaints). This group was ranked in the third place regarding *importance*. This factor was perceived less important for clients in Singapore, and regarding satisfaction, the results were similar to the results of our research. (Ling and Chong, 2005)

The least important factor from the perception of clients was found to be "offering reasonable explanation for complaints". This factor was ranked fifteenth, with RII = 0.825. Regarding *performance*, this factor was ranked the sixth, with RII = 0.643 by clients' respondents. It must be noticed that the least important factor is only 0.09 less than the most important factor's RII. This means the high *importance* for all the factors in this group.

Another four factors were related to dealing with complaints during implementation were discussed by clients, these are: "responding quickly to legitimate complaints" ranked the eleventh, with RII = 0.851, "display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives" ranked the twelfth, with RII = 0.848, "simplifying procedures to either avoid or overcome complaints" ranked the thirteenth, with RII = 0.843 and "Offering personal attentions to complaints" ranked the fourteenth, with RII = 0.831. All of these factors were not satisfactorily performed and required improvements by contractors from the perception of clients. The factor "display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives" was perceived important but not satisfactorily performed as revealed by Ling and Chong (2005) in Singapore which is similar to our results. The factor "Offering personal attentions to complaints" obtained similar results to the results obtained by Ling and Chong (2005) in Singapore regarding both *importance* and *performance*.

The remaining factors were ranked around the average of this group which is RII = 0.859. All of these factors were found to have *performance* levels that are less than the implied *importance*. The study of Soetanto *et al.* (2001) found that these factors were also important in The UK and the *performance* was less than the perceived *importance*, which

is a similar result to the results of this research. The factors " Customer focus/proactive to understand client/architect" and "communication (to coalition member and site personnel)" was one of the least important factors in Singapore, compared to our results and the clients were similarly dissatisfied. (Ling and Chong, 2005)

4.2.8.2 Consultants' perception regarding attitude

As illustrated in Table 4.23, "honesty and integrity" and "collaborative/spirit of co-operation/teamwork" were ranked the first and the second respectively regarding *importance*. "Honesty and integrity" was ranked as the first with RII = 0.950, but regarding *performance* this factor was ranked the eighth, with RII = 0.630. The "honesty and integrity" was ranked the second, with RI = 8.567 by consultants' respondents in the study by Soetanto *et al.* (2001) in The UK. This is dependent on the culture and local common practices. The very high RII by consultants in Gaza is due to Islamic guidance that rules every field of life based on honesty.

Table 4.23: Consultants' perception regarding importance and performance regarding attitude.

Factor	Importance (Ideal)		Performance (based on previous experience)	
	Relative importance index	Rank	Relative importance index	Rank
Honesty and integrity.	0.95	1	0.63	2
Collaborative/spirit of co-operation/teamwork.	0.91	2	0.62	4
Customer focus/proactive to understand client/architect.	0.9	3	0.61	7
Responsibility for their decision.	0.88	4	0.62	4
Keep the client informed/sharing information with architect.	0.87	5	0.59	10
Avoidance of claims (not claims consciousness).	0.87	5	0.58	11
Responding quickly to legitimate complaints.	0.87	5	0.61	7
Working in harmony with consultant firm.	0.87	5	0.57	13
Communication (to coalition member and site personnel).	0.86	9	0.6	9
Display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives.	0.86	9	0.632	1
Treating complaints on completed jobs as priorities.	0.86	9	0.58	11
Proactive attitude towards problems.	0.85	12	0.55	15
Offering reasonable explanation for complaints.	0.82	13	0.63	2
Simplifying procedures to either avoid or overcome complaints.	0.8	14	0.62	4
Offering personal attentions to complaints.	0.78	15	0.56	14
Average	0.863		0.60	

The "collaborative/spirit of co-operation/teamwork" was ranked the second by consultants respondents, with RII = 0.910. Regarding *performance*, this factor was ranked the fourth with RII = 0.620. This factor was ranked the first by consultants in the study by Soetanto *et al.* (2001) with RI = 8.967, and regarding *performance* this factor was ranked the second with RI = 7.700 in the same study. That approximately coincides with our results.

The "customer focus/proactive to understand client/architect" was ranked the third by consultants' respondents, with RII = 0.900 regarding *importance*. The *performance* was about 29% less than the *importance* implied by consultants. Mutual understanding and agreement about objectives and the goals of the project are missing in the local market. This shall be improved from the beginning of the project. The "customer focus/proactive to understand client/architect" was ranked third regarding *importance* by consultants in the UK, with RI = 8.533, and the fourth regarding *performance*, with RI = 7.400. (Soetanto *et al.* 2001).

The fourth most *important* factor was the "responsibility for their decision". Consultants' respondents ranked this factor in the fourth place, with RII = 0.880 regarding *importance*, and in the fourth place, with RII = 0.600 regarding satisfaction with the provided *performance*. The contractors, being responsible for their decisions, provide consultants with trust in the abilities of the contractors, and by the way the consultants' satisfaction will be improved. Soetanto *et al.* (2001) found that the factor, "responsibility for their decision", was ranked the last regarding *importance* by consultants' respondents, with RI = 8.167, and the seventh regarding *performance*, with RI = 7.000.

The least important factor was "offering personal attentions to complaints". This factor was ranked the fifteenth from the perception of consultants regarding *importance*, with RII = 0.780. Regarding *performance*, this factor was ranked the fourteenth, with RII = 0.560.

The second least important factor, "simplifying procedures to either avoid or overcome complaints", was ranked the fourteenth by consultants' respondents regarding *importance* with RII = 0.800, and regarding *performance* this factor was ranked the fourth by consultants' respondents, with RII = 0.620 indicating dissatisfaction by consultants.

"Offering reasonable explanation for complaints" was ranked the thirteenth regarding *importance* by consultants' respondents with RII = 0.820, and regarding *performance* this factor was ranked the second, with RII = 0.630.

The fourth least important factor was "proactive attitude towards problems". This factor was ranked the twelfth with RII = 0.85 by consultants' respondents, and regarding *performance* this factor was ranked the fifteenth, with RII = 0.550.

The four previously described factors shows dissatisfaction of consultants due to the weakness of contractors in handling complaints of the consultants. The expected problems shall be identified according to the type of activity, and the recommended actions shall be proposed by contractors.

The remaining factors were ranked with RIIs around the average, which was 0.863 for consultants' perception regarding this group. The factors "keep the client informed/sharing information with architect", "avoidance of claims (not claims consciousness)", "responding quickly to legitimate complaints" and "working in harmony with consultant firm" were ranked the fifth by consultants' respondents, with RII = 0.870. The consultants' satisfaction with the contractors' *performance* was 26% to 30% less than the implied *importance* for these factors. The first two mentioned factors were discussed by Soetanto *et al.* (2001) in his study of The UK construction market had similar *importance* and the contractors didn't provide satisfaction. (Soetanto *et al.* 2001)

The last three factors "communication (to coalition member and site personnel)", "display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives" and "treating complaints on completed jobs as priorities" was ranked the ninth regarding *importance*, with RII = 0.860 by consultants' respondents. The perceived *performance* for these factors was 23% to 28% less than the implied *importance* by consultants' respondents.

4.2.8.3 Comparison between clients' and consultants' perceptions regarding attitude

Clients and consultants agreed with each other regarding the importance of "honesty and integrity" and "collaborative/spirit of co-operation/teamwork". The three least important factors for both clients and consultants were "offering personal attentions to complaints", "simplifying procedures to either avoid or overcome complaints" and "Offering reasonable explanation for complaints".

Clients and consultants appeared to imply the same *importance* for the group of attitude as illustrated in table 4.24. As shown in tables 4.22 and 4.23 the clients and consultants agreed regarding the *importance* of most of the factors mentioned and agreed regarding the least important factors. It was obvious that both clients and consultants agreed regarding the need of improvement for all of the issues in the group of attitude satisfaction factors.

In general it can be noticed in Table 4.24 that when using independent samples t-test, the p-values for importance and performance were more than $\alpha = 0.05$, this means the acceptance of H_o which states that there is no difference between the perceptions of clients and consultants regarding this group.

Table 4.24: Comparison between average RIIs and correlation between clients and consultants regarding the attitude using independent samples t-test.

Group	Importance (Ideal)					
	Av. RII		Mean ranks		t-value	p-value
	client	Consultant	client	Consultant		
Attitude	0.859	0.863	3.740	3.659	0.694	**0.490**
	Performance (based on previous experience)					
	Av. RII		Mean ranks		t-value	p-value
	client	Consultant	client	Consultant		
	0.631	0.600	3.156	2.998	0.952	**0.344**

4.3 Clients' and consultants' perceptions regarding the repetitive work concept

This section investigates the perceptions of the clients and consultants regarding the correlation between the level of *performance* provided, and the chance of doing repetitive work with the same contractor and the influence of that issue on the selection mechanism or approach. This section includes the following four questions based on the studies of: (Kärnä (2004), Egemen and Mohamed (2005), Al Momani (2000) and Maloney (2002)). The answers were based on scaled answers as shown below:

Opinion	Item	Totally Disagree	Disagree	Neutral	Agree	Totally Agree
	Scale	1	2	3	4	5

Q1. "The local contractors care to achieve the client's and consultant's satisfaction through outstanding performance". What is your opinion?

Q2. "The contractors' care to achieve the client's and consultant's satisfaction influences the performance level of the contractor". What is your opinion?

Q3. "The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence their choice when the contractor is bidding or applying for new work". What is your opinion?

Q4. "The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence the possibility of existence of long term cooperation and an opportunity for repetitive work with that client". What is your opinion?

Regarding the first question (Q1) the clients perceived that there is no high motivation or desire for the local contractors to achieve the clients' satisfaction during the implementation of construction projects in Gaza Strip. The mean for this question was 3.24 which are slightly higher than the neutral rank of the value (3). Consultants perceived a lower level of desire to achieve their satisfaction by contractors. The mean for the consultants' responses was 2.95, which is less than the neutral rank of the value (3).

The second question (Q2) illustrates that there is no clear influence on the contractors' *performance* caused by the well or the desire to achieve the clients' and the consultants' satisfaction. Both the clients and the consultants were around the neutral score for this

group. The average in the case of clients was 3.13 and in the case of consultants it was 3.00. this was clearly shown in Table 4.25.

Table 4.25 Clients' perception regarding the relation between satisfaction and repetitive work.

Question #	Clients		Consultants	
	Mean	Std. Deviation	Mean	Std. Deviation
Q1	**3.24**	0.963	**2.95**	0.826
Q2	**3.13**	1.227	**3.00**	1.214
Q3	**3.59**	1.056	**3.60**	0.995
Q4	**2.80**	1.290	**3.65**	1.040

Question (Q3) aims to find the influence of the clients' and consultants' satisfaction with the contractors' *performance* on the selection for future works. It was achieved that there is an influence on their choice by the level of *performance* provided by the contractor in previous projects and bidding for a project. The result was around the neutral score (Neutral = 3), this means that there is almost no influence on the choice of clients or consultants by the previous experience with the contractor under consideration.

The fourth question (Q4) considered the influence of satisfaction through previous experience with a specific contractor, on the existence of long term cooperation and repetitive work with the same contractor. The clients perceived that there is approximately no effect of the level of *performance* provided by contractor on the long term cooperation or repetitive work opportunities for the contractor. On the other hand, consultants perceived that there might be an influence for that issue on the repetitive work concept.

The result is not so motivating for the contractors to improve their *performance* standards, due to the absence of any revenues or benefits associated with the proposed improvement in their *performance*.

4.4 Analyzing the agreement between clients and consultants

This section will discuss the difference between clients and consultants regarding the different groups of satisfaction groups. The independent samples t-test was used to test the difference in the implied means. The independent samples t-test shows the mean difference between two groups. The null hypothesis (H_o) for this test assumes the existence of no difference between the clients' and consultants' perceptions, for a significance level of $\alpha = 0.05$. The null hypothesis (H_o) is rejected if the P-Value is less than α. Table 4.26 illustrates that, after applying independent samples t-test for the *importance* and *performance* mean values implied by both clients and consultants, the P-Values were more than 0.05 for all the satisfaction groups.

Table 4.26: Independent samples t-test - Comparing means by clients and consultants for main satisfaction groups regarding importance and performance.

No.	Group	Importance (Ideal)				Performance (based on previous experience)			
		Means		t-value	p-value	Means		t-value	p-value
		Consultant	client			Consultant	client		
1	Pre-construction stage	4.240	4.138	1.005	**0.318**	3.348	3.174	1.116	**0.268**
2	construction stage	4.293	4.335	-0.403	**0.688**	3.025	2.857	0.986	**0.327**
3	Principal measures	-	-	-	**-**	-	-	-	**-**
3.1	Time performance	4.246	4.286	-0.356	**0.723**	3.069	2.950	0.693	**0.490**
3.2	Cost performance	4.224	4.190	0.277	**0.783**	2.959	3.020	-0.285	**0.776**
3.3	Quality of construction and workman ship	4.068	4.186	-1.036	**0.303**	3.066	2.881	1.065	**0.290**
3.4	Safety measures and standards	4.207	4.017	1.295	**0.199**	2.354	1.917	1.951	**0.054**
4	Resources management	4.269	4.135	1.197	**0.234**	3.106	3.145	-0.247	**0.805**
5	Site personnel	4.319	4.248	0.718	**0.475**	3.301	3.191	0.665	**0.508**
6	Variations, drawings and handing over	4.296	4.344	-0.375	**0.709**	3.323	3.131	1.025	**0.308**
7	Quality of service	4.195	4.185	0.098	**0.922**	3.272	3.114	1.153	**0.252**
8	Attitude	3.740	3.659	0.694	**0.490**	3.156	2.998	0.952	**0.344**
Average		**43.80**	**4.241**	**4.216**	**0.276**	**0.783**	**3.090**	**2.943**	**1.055**

4.5 One Way ANOVA for clients' and consultants' perceptions regarding importance and performance according to experience

Through applying independent samples t-test, it was revealed that both clients and consultants agree with each other, regarding the levels of *importance* for the satisfaction factors and the levels of the provided *performance* by local contractors. The One Way Analysis of Variance (One Way ANOVA) was conducted on the combined categories of respondents, i.e. clients and consultants in the same time. In other words the (91) respondents were considered. (Polit and Hungler, 1978)

Table 4.27 is split into two parts. Table 4.27.a considers the level of agreement between the different levels of experience, regarding the *importance* of the listed groups of satisfaction factors. The Table 4.27.b considers the level of agreement between the different levels of experience, regarding the level of *performance* provided by local contractors.

The null hypothesis (H_o) assumes that there is no difference related to the level of experience between for the respondents and the implied *importance* or the *performance*, either by clients or consultants, at a significance level of $\alpha = 0.05$.

In both tables 4.27.a and 4.27.b almost all of the P-Values were higher than 0.05. This means the acceptance of the null hypothesis (H_o); this means that there exists no difference between the different categories of experience. The importance of time performance factors were considered less important for respondents with less than five years of experience, and the *performance* during the construction stage got a P-Value less than 0.05, which indicates a difference between the opinions of respondents with experience more than 20 years regarding the construction stage.

Regarding *importance* of the different satisfaction groups, the average P-Value for the different categories of experience was 0.490 in Table 4.27.a. Regarding *performance*, the average P-Value in Table 4.27.b was 0.354. This indicates higher agreement between different levels of experience about the *importance* of the different groups, compared to the provided level of *performance* by local contractors.

Table 4.27.a: One Way – ANOVA based on experience for clients and consultants regarding **Importance**.

No.	Group	K-values				F-value	P-value
		< 5	6-10	11-20	20<		
1	Pre-construction stage	4.229	4.234	4.230	4.174	0.106	0.956
2	construction stage	4.266	4.214	4.360	4.360	0.719	0.543
3	Principal measures	-	-	-	-	-	-
3.1	Time performance	*3.983*	4.317	4.296	4.344	2.790	**0.045**
3.2	Cost performance	4.129	4.269	4.264	4.164	0.436	0.728
3.3	Quality of construction and workman ship	3.901	4.128	4.124	4.170	1.346	0.265
3.4	Safety measures and standards	4.062	4.262	4.159	4.143	0.412	0.745
4	Resources management	4.159	4.252	4.282	4.233	0.275	0.843
5	Site personnel	4.187	4.252	4.364	4.380	1.143	0.336
6	Variations, drawings and handing over	4.162	4.293	4.307	4.439	0.953	0.419
7	Quality of service	4.109	4.171	4.237	4.228	0.412	0.745
8	Attitude	4.090	4.315	4.340	4.397	1.755	0.162
Average		**4.116**	**4.247**	**4.269**	**4.276**	**0.813**	**0.490**

Table 4.27.b: One Way – ANOVA based on experience for clients and consultants regarding **performance**.

No.	Group	K-values				F-value	P-value
		< 5	6-10	11-20	20<		
1	Pre-construction stage	3.346	3.269	3.190	3.481	0.941	0.425
2	construction stage	3.007	2.843	2.812	*3.363*	3.459	**0.020**
3	Principal measures	-	-	-	-	-	-
3.1	Time performance	3.244	3.002	2.845	3.190	1.692	0.175
3.2	Cost performance	3.126	2.791	2.886	3.164	1.032	0.383
3.3	Quality of construction and workman ship	2.951	2.945	2.918	3.306	1.616	0.192
3.4	Safety measures and standards	2.360	2.157	2.187	2.381	0.356	0.785
4	Resources management	3.206	2.998	3.089	3.208	0.580	0.630
5	Site personnel	3.346	3.261	3.218	3.318	0.170	0.917
6	Variations, drawings and handing over	3.169	3.403	3.144	3.411	0.885	0.452
7	Quality of service	3.349	3.194	3.194	3.251	0.347	0.791
8	Attitude	3.055	3.007	3.068	3.375	1.431	0.239
Average		**3.105**	**2.992**	**2.959**	**3.223**	**1.099**	**0.354**

4.6 One Way ANOVA for clients' and consultants' perceptions regarding importance and performance according to position

As discussed before in the previous section, The One Way ANOVA was used to discuss the mean difference between different positions of respondents of clients and consultants. Tables 4.28.a and 4.28.b illustrate that all the P-Values mentioned for the different satisfaction groups were above $\alpha = 0.05$.

This means the acceptance of (H_o) which states that there is no significant difference between the different positions, within the same satisfaction group. Regarding *importance*, the average P-Value of all groups was 0.212, and the average P-Value for all groups regarding *performance* was 0.820 which illustrates higher degree of agreement between the different positions regarding the level of *performance* provided by local contractors.

Table 4.28.a: One Way – ANOVA – based on position for clients and consultants regarding **importance**

No.	Group	K-values						F-value	P-value
		Project Eng.	Supervision Eng.	Head of Dept.	Office Eng.	Procurement Eng.	Other		
1	Pre-construction stage	4.17	4.08	4.26	4.33	4.65	4.23	2.225	0.059
2	construction stage	4.32	4.11	4.26	4.46	4.65	4.33	1.981	0.090
3	Principal measures	-	-	-	-	-	-	-	-
3.1	Time performance	4.31	4.11	4.26	4.20	4.64	4.17	1.636	0.159
3.2	Cost performance	4.23	4.03	4.27	4.31	4.50	4.23	1.048	0.395
3.3	Quality of construction and workman ship	4.06	3.97	4.22	4.18	4.38	4.07	1.065	0.386
3.4	Safety measures and standards	4.16	4.09	4.16	4.34	3.98	4.28	0.404	0.845
4	Resources management	4.24	4.13	4.23	4.23	4.45	4.33	0.594	0.704
5	Site personnel	4.33	4.14	4.25	4.41	4.56	4.35	1.460	0.211
6	Variations, drawings and handing over	4.35	4.10	4.24	4.42	4.63	4.35	1.330	0.259
7	Quality of service	4.23	4.02	4.14	4.23	4.50	4.22	1.509	0.196
8	Attitude	4.33	4.16	4.32	4.17	4.59	4.37	1.136	0.348
Average		**4.17**	**4.08**	**4.26**	**4.33**	**4.65**	**4.23**	**1.460**	**0.212**

Table 4.28.b: One Way – ANOVA – based on position for clients and consultants regarding **performance**

No.	Group	K-values						F-value	P-value
		Project Eng.	Supervision Eng.	Head of Dept.	Office Eng.	Procurement Eng.	Other		
1	Pre-construction stage	3.32	3.18	3.09	3.60	3.72	3.29	1.349	0.252
2	construction stage	2.95	2.92	3.01	3.26	3.14	2.91	0.416	0.837
3	Principal measures	-	-	-	-	-	-	-	-
3.1	Time performance	3.05	2.94	3.14	3.18	3.00	3.02	0.198	0.962
3.2	Cost performance	3.04	3.01	2.62	3.32	2.83	2.90	0.766	0.577
3.3	Quality of construction and workman ship	3.03	3.02	2.96	3.09	3.19	2.94	0.135	0.984
3.4	Safety measures and standards	2.29	2.27	2.41	2.29	1.80	2.19	0.395	0.851
4	Resources management	3.16	3.10	3.03	3.16	3.48	2.88	0.835	0.528
5	Site personnel	3.30	3.19	3.34	3.44	3.78	2.93	1.681	0.148
6	Variations, drawings and handing over	3.32	3.20	3.38	3.39	3.63	2.96	0.848	0.520
7	Quality of service	3.25	3.19	3.25	3.37	3.34	3.11	0.306	0.908
8	Attitude	3.15	3.16	3.06	3.10	3.60	2.81	1.250	0.293
Average		**3.08**	**3.02**	**3.03**	**3.20**	**3.23**	**2.90**	**0.439**	**0.820**

4.7 Testing the correlation between groups:

This section discusses the relationship between the different groups of satisfaction factors. The Pearson Correlation Test was conducted to find out the different agreements and disagreement for both clients and consultants. This test is based on assuming a null hypothesis (H_o) of the existence of no significant relationship between the different groups of satisfaction factors. The null hypothesis (H_o) is rejected if the obtained significance is less than $\alpha = 0.05$. The following section discusses the perceptions of both clients and consultants, through tables that are symmetric around a diagonal axis.

a. Correlation between satisfaction groups regarding Importance and performance based on clients' perception:

All the P-Values shown in Tables 4.29.a and 4.29.b were below $\alpha = 0.05$, which means the rejection of (H_o). This means the existence of a significant relationship between the different satisfaction groups. This is the case regarding both *importance* (Table 4.29.a) and *performance* (Table 4.29.b).

Table 4.29.a: correlation between satisfaction groups regarding Importance based on clients' perception.

		Pre-construction stage: (After Awarding)	Construction	Principal Measures	Resources management	Site personnel	Variations, drawings and handing over	Quality of service	Attitude
Pre-construction stage: (After Awarding)	Pearson Correlation		.663	.554	.473	.433	.464	.571	.493
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N		71	71	71	71	71	71	71
Construction	Pearson Correlation			.685	.561	.668	.595	.654	.588
	Sig. (2-tailed)			.000	.000	.000	.000	.000	.000
	N			71	71	71	71	71	71
Principal Measures	Pearson Correlation				.743	.775	.738	.758	.780
	Sig. (2-tailed)				.000	.000	.000	.000	.000
	N				71	71	71	71	71
Resources management	Pearson Correlation					.755	.689	.715	.750
	Sig. (2-tailed)					.000	.000	.000	.000
	N					71	71	71	71
Site personnel	Pearson Correlation						.730	.717	.749
	Sig. (2-tailed)						.000	.000	.000
	N						71	71	71
Variations, drawings and handing over	Pearson Correlation							.734	.744
	Sig. (2-tailed)							.000	.000
	N							71	71
Quality of service	Pearson Correlation								.818
	Sig. (2-tailed)								.000
	N								71
Attitude	Pearson Correlation								
	Sig. (2-tailed)								
	N								

Table 4.29.b: correlation between satisfaction groups regarding Importance based on clients' perception.

		Pre-construction stage: (After Awarding)	Construction	Principal Measures	Resources management	Site personnel	Variations, drawings and handing over	Quality of service	Attitude
Pre-construction stage: (After Awarding)	Pearson Correlation		.711	.585	.477	.505	.629	.512	.640
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N		71	71	71	71	71	71	71
Construction	Pearson Correlation			.814	.715	.598	.588	.660	.656
	Sig. (2-tailed)			.000	.000	.000	.000	.000	.000
	N			71	71	71	71	71	71
Principal Measures	Pearson Correlation				.670	.592	.673	.761	.707
	Sig. (2-tailed)				.000	.000	.000	.000	.000
	N				71	71	71	71	71
Resources management	Pearson Correlation					.742	.585	.740	.669
	Sig. (2-tailed)					.000	.000	.000	.000
	N					71	71	71	71
Site personnel	Pearson Correlation						.760	.708	.739
	Sig. (2-tailed)						.000	.000	.000
	N						71	71	71
Variations, drawings and handing over	Pearson Correlation							.706	.744
	Sig. (2-tailed)							.000	.000
	N							70	70
Quality of service	Pearson Correlation								.762
	Sig. (2-tailed)								.000
	N								71
Attitude	Pearson Correlation								
	Sig. (2-tailed)								
	N								

b. Correlation between satisfaction groups regarding Importance and performance based on consultants' perception

The consultants' results showed also the existence of relationships between most of the groups. As shown in Table 4.30.a regarding *importance*, the group of "resources management" achieved no significant relationship with the "pre-construction stage" and the "construction stage" regarding *importance*. The group "Attitude" achieved no significant relationship with the group "pre-construction stage".

Regarding the contractors' *performance* the group "site personnel" achieved no significant relationship with four other groups, these are "pre-construction stage", "construction stage", "principal measures" and "quality of service". As shown in Table 4.30.b the group "variations, drawings and handing over" achieved no significant relationships with three groups; these are "pre-construction stage", "construction stage" and "resources management".
Finally, the group "attitude" achieved no significant relationship with two significant groups, these are "pre-construction stage" and "site personnel".

Table 4.30.a: Correlation between satisfaction groups regarding Importance based on consultants' perception.

		Pre-construction stage: (After Awarding)	Construction	Principal Measures	Resources management	Site personnel	Variations, drawings and handing over	Quality of service	Attitude
Pre-construction stage: (After Awarding)	Pearson Correlation		.794	.695	.398	.507	.583	.523	.380
	Sig. (2-tailed)		.000	.001	.082	.022	.007	.018	.099
	N		20	20	20	20	20	20	20
Construction	Pearson Correlation			.842	.439	.633	.727	.787	.702
	Sig. (2-tailed)			.000	.053	.003	.000	.000	.001
	N			20	20	20	20	20	20
Principal Measures	Pearson Correlation				.725	.789	.777	.788	.790
	Sig. (2-tailed)				.000	.000	.000	.000	.000
	N				20	20	20	20	20
Resources management	Pearson Correlation					.629	.513	.468	.578
	Sig. (2-tailed)					.003	.021	.037	.008
	N					20	20	20	20
Site personnel	Pearson Correlation						.677	.713	.730
	Sig. (2-tailed)						.001	.000	.000
	N						20	20	20
Variations, drawings and handing over	Pearson Correlation							.641	.678
	Sig. (2-tailed)							.002	.001
	N							20	20
Quality of service	Pearson Correlation								.811
	Sig. (2-tailed)								.000
	N								20
Attitude	Pearson Correlation								
	Sig. (2-tailed)								
	N								

Table 4.30.b: Correlation between satisfaction groups regarding performance based on consultants' perception.

		Pre-construction stage: (After Awarding)	Construction	Principal Measures	Resources management	Site personnel	Variations, drawings and handing over	Quality of service	Attitude
Pre-construction stage: (After Awarding)	Pearson Correlation		.587	.464	.801	.433	.215	.415	.587
	Sig. (2-tailed)		.006	.039	.000	.057	.363	.068	.006
	N		20	20	20	20	20	20	20
Construction	Pearson Correlation			.665	.610	.409	.324	.571	.723
	Sig. (2-tailed)			.001	.004	.073	.164	.009	.000
	N			20	20	20	20	20	20
Principal Measures	Pearson Correlation				.529	.186	.483	.745	.780
	Sig. (2-tailed)				.017	.433	.031	.000	.000
	N				20	20	20	20	20
Resources management	Pearson Correlation					.452	.170	.617	.724
	Sig. (2-tailed)					.045	.473	.004	.000
	N					20	20	20	20
Site personnel	Pearson Correlation						.462	.393	.544
	Sig. (2-tailed)						.040	.087	.013
	N						20	20	20
Variations, drawings and handing over	Pearson Correlation							.566	.627
	Sig. (2-tailed)							.009	.003
	N							20	20
Quality of service	Pearson Correlation								.868
	Sig. (2-tailed)								.000
	N								20
Attitude	Pearson Correlation								
	Sig. (2-tailed)								
	N								

4.8 Summary

This chapter revealed some important issues about the construction industry in Gaza Strip. These issues are related to the clients' and consultants' respondents regarding their implied *importance* and *performance* provided by local contractors. The clients' respondents implied *importance* for all the groups of satisfaction factors. These groups were ranked as shown in Table 4.31, according to the shown relative importance index of each group.

Table 4.31 illustrates that the most important groups from the perception of clients were "site personnel". This group was ranked the fourth from the perception of consultants' respondents. Regarding *performance*, this group was found to be about 20% below the implied *importance*. Clients' respondents ranked "site personnel" in the third place and the consultants' respondents ranked it in the first place regarding *performance*.
Both clients' and consultants' respondents ranked the group of "construction stage" in the second place, with slight different values of relative importance indices (RII). Regarding *performance*, the "construction stage" group was also ranked the seventh by both parties, i.e. clients and consultants.

The third most important group from the perception of clients was the group of "variations, drawings and handing over". This group was ranked the first regarding *importance* by consultants' respondents with a slightly different relative importance index. The group of "variations, drawings and handing over" was ranked the second by clients' respondents and the fourth by the consultants' respondents, with 20% less *performance* levels. The group "attitude" was found important for both clients and consultants, and its RIIs were close to the most important factor for each party.
The least important factor from the perception of clients' respondents were "the principal measures" ranked the eighth, the "quality of service" ranked the seventh and the "pre-construction stage" in the sixth place. The consultants' respondents perceived a slightly different rank for the least important groups of factors. The least important group from the perception of consultants was the "resources management" which was ranked fifth by clients' respondents. The group of "pre-construction stage" was ranked the seventh, and the group of "principal measures" was ranked the sixth regarding *importance* by consultants' respondents.

Table 4.31: Ranking of satisfaction groups according to clients' and consultants' respondents.

	Group	Importance				Performance			
		clients	Rank	consultants	Rank	clients	Rank	consultants	Rank
1	Pre-construction stage	0.848	6	0.828	7	0.670	1	0.635	2
2	Construction stage	0.859	2	0.867	2	0.605	7	0.571	7
3	Principal measures	0.837	8	0.834	6	0.572	8	0.538	8
3.1	Adherence to schedule (time performance)	0.849	1	0.857	1	0.614	1	0.590	2
3.2	Adherence to budget (cost performance)	0.845	2	0.838	2	0.592	3	0.604	1
3.3	Quality of construction and workmanship	0.813	4	0.837	3	0.613	2	0.576	3
3.4	Safety measures and standards	0.841	3	0.803	4	0.471	4	0.383	4
4	Resources management	0.854	5	0.827	8	0.621	6	0.629	3
5	Site personnel	0.864	1	0.850	4	0.660	3	0.638	1
6	Variations, drawings and handing over	0.859	3	0.869	1	0.665	2	0.626	4
7	Quality of service	0.839	7	0.837	5	0.654	4	0.623	5
8	Attitude	0.859	4	0.863	3	0.631	5	0.600	6

Table 4.32.a shows the most important factors in each group from the perception of clients, and Table 4.32.b shows the most important factors in each group from the perception of consultants.

Table 4.32.a: Most Important factors from the perception of clients in each group and their level of satisfaction.

Group	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Relative importance index	Rank	Relative importance index	Rank
Pre-construction stage	Understanding of contract and specifications.	0.93	1	0.707	1
	Plan of work and method statement.	0.899	2	0.687	4
	Ability and willingness to help develop the client brief of the project.	0.862	3	0.707	1
Construction stage	Managing the site through top management level.	0.896	1	0.657	1
	Providing updates on work as it progresses and providing periodic listing of all work orders and their status.	0.889	2	0.58	7
	Site supervision and control through supporting personnel level	0.878	3	0.656	2
Principal measures					
Adherence to schedule (time performance)	Finishing the project on time.	0.94	1	0.574	7
	Plan and schedule jobs quickly.	0.87	2	0.579	6
	Providing notifications and explanations for work delays.	0.87	2	0.635	2
Adherence to budget (cost performance)	Finishing project within budget.	0.883	1	0.629	1
	Employing adequate cost control measures to stay within budget.	0.874	2	0.591	4
	Having adequate financing arrangements.	0.834	3	0.606	3
Quality of construction and workmanship	Applying quality assurance procedures.	0.916	1	0.697	1
	Ensuring the durability of the completed facility as an integral part of contractor functions. (Innovation through new ideas or technologies)	0.818	2	0.621	3
	Perceiving quality as an essential dimension of overall client satisfaction.	0.817	3	0.653	2

Group	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Relative importance index	Rank	Relative importance index	Rank
Safety measures and standards	Personal protection equipment.	0.906	1	0.504	2
	Availability of first aid supplies.	0.868	2	0.474	4
	Compliance with local safety regulations.	0.859	3	0.469	6
Resources management	Maximum resources and financial capabilities.	0.921	1	0.591	8
	Strength of contractor site team (i.e. quantity).	0.876	2	0.641	4
	Manpower management (quantity and quality of craft operatives).	0.873	3	0.638	5
Site personnel	Project manager performance and adequacy of authority.	0.901	1	0.643	8
	Availability of highly qualified technical staff in the contractor's firm.	0.9	2	0.656	7
	Availability of highly qualified managerial staff in the contractor firm.	0.894	3	0.638	10
Variations, drawings and handing over	Completion stage, finishing and ease of handing over and settlement of final account.	0.89	1	0.683	3
	Processing variations (e.g. speed, flexibility).	0.887	2	0.646	7
	Smoothness of operation and hand-over.	0.874	3	0.679	4
Quality of service	Ability to make rapid decisions.	0.901	1	0.632	11
	Telephone inquiries and correspondence.	0.887	2	0.663	4
	Repairing of defects and deficiencies noticed during handover inspection.	0.873	3	0.706	1
Attitude	Honesty and integrity.	0.913	1	0.637	8
	Collaborative/spirit of co-operation/teamwork.	0.887	2	0.646	5
	Working in harmony with consultant firm.	0.877	3	0.635	9

Table 4.32.b: Most Important factors from the perception of consultants in each group and their level of satisfaction.

Group	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Relative importance index	Rank	Relative importance index	Rank
Pre-construction stage	Understanding of contract and specifications.	0.92	1	0.63	7
	Ability and willingness to help develop the client brief of the project.	0.88	2	0.66	2
	Providing a reasonable estimate of work and defining milestones, when requests for starting work are issued.	0.85	3	0.611	8
Construction stage	Site supervision and control through supporting personnel level	0.93	1	0.65	3
	Project control, monitoring process and cost control.	0.92	2	0.53	7
	Managing the site through top management level.	0.91	3	0.67	1
Principal measures					
Adherence to schedule (time performance)	Finishing the project on time.	0.94	1	0.66	1
	Maintaining sense of urgency.	0.88	2	0.62	2
	Plan and schedule jobs quickly.	0.87	3	0.54	6
Adherence to budget (cost performance)	Finishing project within budget.	0.91	1	0.66	1
	Employing adequate cost control measures to stay within budget.	0.84	2	0.58	3
	Conducting value engineering to reduce costs optimizing the available feasible alternatives.	0.82	3	0.56	4
Quality of construction and workmanship	Applying quality assurance procedures.	0.92	1	0.56	6
	Ensuring the durability of the completed facility as an integral part of contractor functions.(Innovation through new ideas or technologies)	0.89	2	0.6	1
	Giving top priority to the performance (operational) characteristics of the facility.	0.87	3	0.57	4
Safety measures and standards	Availability of first aid supplies.	0.87	1	0.4	2
	Personal protection equipment.	0.84	2	0.41	1

Group	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Relative importance index	Rank	Relative importance index	Rank
	Compliance with local safety regulations.	0.84	2	0.39	5
Resources management	Maximum resources and financial capabilities.	0.89	1	0.62	7
	Strength of contractor site team (i.e. quantity).	0.87	2	0.66	5
	Material management.	0.86	3	0.62	7
Site personnel	Skills of the contractor's work supervisors.	0.905	1	0.69	2
	Individuals' performance and abilities.	0.9	2	0.67	3
	Availability of highly qualified managerial staff in the contractor firm.	0.89	3	0.62	9
Variations, drawings and handing over	Smoothness of operation and hand-over.	0.92	1	0.65	2
	Completion stage, finishing and ease of handing over and settlement of final account.	0.89	2	0.61	6
	Processing variations (e.g. speed, flexibility).	0.88	3	0.63	3
Quality of service	Repairing of defects and deficiencies noticed during handover inspection.	0.88	1	0.64	4
	Commitment of key persons (active and continuous).	0.874	2	0.653	2
	Speed and reliability of service.	0.87	3	0.62	7
Attitude	Honesty and integrity.	0.95	1	0.63	2
	Collaborative/spirit of co-operation/teamwork.	0.91	2	0.62	4
	Customer focus/proactive to understand client/architect.	0.9	3	0.61	7

Chapter 5: Conclusions and Recommendations

5.1 Introduction

In this chapter the outcomes of this research are summarized. The perceptions of clients and consultants are discussed with their indications. Conclusions and recommendations are stated through the conducted observations. All of these outcomes supported the development of an overall framework, which would assist the local contractors to improve their performance in order to achieve more clients' and consultants' satisfaction. This will lead to better understanding of the local market's situation and the suitable approach of development according to the existing culture and circumstances.

5.2 Conclusions:

The main aim of this research was to investigate the clients' and consultants' perceptions regarding the importance of the identified satisfaction factors and the satisfaction with the performance provided by contractors for these factors.

This aim was achieved through a number of objectives, these were: First to identify the main satisfaction factors for the clients and consultants to be considered by contractors and to rank them according to their importance. The second objective was to investigate the relationship between the "*importance*" of the identified satisfaction criteria for clients and consultants, and the "*performance*" of the identified satisfaction criteria provided by the local contractors; to reveal their relation with the level of satisfaction provided from the perceptions of both clients and consultants. The third objective was to develop a framework through discussion of the defined factors. Finally the fourth objective was to investigate the clients' and consultants' perceptions of doing repetitive work with the same contractors in the future works based on the satisfaction with the provided performance.

5.2.1 Perceptions regarding importance and performance by clients and consultants for the satisfaction statements

The satisfaction factors were ranked according to their importance, for clients and consultants, from the most important to the least important. The different factors were

also ranked according to the provided performance from the best to the worst performed. The *importance* perceived by clients and consultants for these factors, and the satisfaction with the provided *performance* by contractors were discussed in the following sections.

A. The group of pre-construction stage satisfaction factors

The group of pre-construction stage was considered important for both clients and consultants. The level of performance provided by local contractors was perceived less than the importance implied by clients and consultants for all the identified satisfaction statements, so the contractors' performance regarding this group requires improvement.

The group of pre-construction stage was one of the least important groups of factors. The most important issues in this group were the better understanding of the contract and specifications of the work to mitigate disputes and misunderstandings during implementation. At the same time preparation of a precise plan of work and method statement were important to guarantee smooth progress of the activities. Finally, showing willingness to help the client or his representative in developing the requirements of the project before and during implementation; was one of the most important issues for improving the levels of satisfaction.

B. The group of construction stage satisfaction factors

The group of construction stage was considered important for both clients and consultants. The level of performance provided by local contractors was perceived less than the importance implied by clients and consultants, so the contractors' performance regarding this group also requires improvement. The group of construction stage was one of the most important groups of the satisfaction criteria. Regarding the importance of the satisfaction factors of the group of construction stage, one of the most important issues were the involvement of top management levels combined with the supporting staff levels in the implementation for an improved level of decision making and time performance. Another one of the most important issues was the provision of adequate updates on work as it progresses and providing periodic listing of all work orders and their status; this will keep all involved parties informed and up-to-date with the latest activities and milestones and problems occurring in the site and also will facilitate better cooperation environment. Project control, monitoring process and cost control were found so important for improving the management levels in the site and by the way improving satisfaction.

C. The group of principal measures satisfaction factors

The group of principal measures was important for both clients and consultants, although it was ranked in the last place by both of them. At the same time both respondents agreed on that this group requires a lot of improvement. This group was considered as one of the least important groups by clients and consultant and at the same time it was of the least satisfactorily performed. The most important satisfaction issues in the group of principal measures were finishing the project on time, within budget and with best quality. The safety measures were considered the least important, and within this group providing safety equipment and first aid supplies were the most important. Better consideration for these issues can directly and significantly affect the level of satisfaction for both clients and consultants because these issues are essential in the construction process.

D. The group of resources management satisfaction factors

The factors of resources management group was important for both clients and consultants (although it was ranked as one of the least important groups of satisfaction factors), and the performance of contractors required improvement to achieve better levels of satisfaction. It was perceived that the most important issues within this group were the resources and financial capabilities of the contractor, this highly affects the performance of the contractor and by the way the satisfaction levels. The quantity of the contractor's site team is very important and indicates the expected pattern of performance and progress of work during implementation, in addition to the manpower and material management.

E. The group of site personnel satisfaction factors

The results revealed that the group of site personnel satisfaction factors was considered important for both clients and consultants. The two parties were dissatisfied with the contractors' performance regarding this group, and they perceived the need for performance improvement by local contractors. The project manager's performance and authority given in the site, supported by the availability of highly qualified technical and managerial staff with adequate skills and capabilities in the contractor's firm were the most important issues considered by clients and consultants in judging the satisfaction provided by local contractors.

F. The group of variations, drawings and handing over satisfaction factors

This group was perceived important for both clients and consultants, and they agreed with each other that contractors are required to improve their performance regarding the group of variations, drawings and handing over to achieve better levels of satisfaction. This stage was one of the most important groups from the perception of both clients and consultants. The stage of completion stage and the processing of variations and the settlement of final accounts and the ease of the final handing over was very essential in affecting the levels of satisfaction because they are so close to the end of the project and the last impression is the most probable to keep in the minds of clients and consultants after completion.

G. The group of quality of service satisfaction factors

This group was perceived important for both clients and consultants, but the two parties agreed with each other that the contractors' performance requires improvement to reach the clients' and consultants' expectations and satisfaction. This group was perceived as one of the least important groups from the perceptions of clients and consultants. The decision making process in addition to correspondence documentation indicates the capabilities of the contractor's staff technically and managerially and this enforces the satisfaction. Repairing of defects and deficiencies during handover inspection and commitment of key persons combined with speed and reliability of service provides additional privilege for the contractor from the perception of the client and his representative.

H. The group of attitude satisfaction factors

The group of attitude was perceived important for both clients and consultants and they agreed with each other that this group of satisfaction requires to be improved by local contractors for better levels of clients' and consultants' satisfaction. This group was one of the most important groups from the perception of clients and consultants. Honesty and integrity must prevail in the site in all forms of interference between parties. Collaborative spirit of co-operation, teamwork and working in harmony with consultant firm are important to be considered to ease the whole implementation process with respect to all aspects.

5.2.2 The relationship between the clients' and consultants' perceptions regarding importance and performance

It was revealed through the analysis of the obtained data, using independent samples t-test for correlation, that there was no difference between the clients' and consultants' perceptions regarding both *importance* and *performance*. The two parties generally agreed that the provided *performance* was significantly less than the implied *importance*. This means that the two parties were dissatisfied with local contractors' *performance*. It was found also that neither the experience nor the position within the project implementation process affected the perceptions of the respondents. This means that the different levels of experience and different positions implied similar levels of importance and at the same time were not satisfied with the provided performance.

5.2.3 Influence of satisfaction on doing repetitive work with the same contractor

Contractors were not perceived to do any extra effort trying to achieve more satisfaction for clients and consultants. Clients and consultants perceived that a slight effect can influence their choice between contractors, if they experienced adequate satisfaction in previous projects. Clients were less encouraged to have long term cooperation with contractors of high performance levels, compared to the consultants.

5.3 Recommendations

This section will summarize the recommended ideas, based on the results of this research. The recommendations will be divided into three parts. The first will target the contractors and the second part will target clients and consultants. The last part will describe the ideas recommended to the different parties regarding the concept of repetitive work.

5.3.1 Recommendations for contractors

Regarding the performance in **the pre-construction stage**, contractors are recommended to have better understanding for contract documents, specifications, regulations and standards to reduce claims and conflicts due to misunderstandings and surprises. More precise, plan of work and method statement are required by contractors to prove reliability of the contractor. The accurate estimation is recommended to be enhanced by contractors for better chances of winning bids and not being far away from clients' and consultants' estimates. The contractors are also recommended to consider all the

circumstances of the local market, such as occupation and closures, in order to reflect these circumstances on the offered price. At the same time the contractor must keep reasonable prices. Value engineering is recommended by clients to be performed by contractors for the local market. This should include availability of materials, prices, quality and specifications.

Regarding the performance in **the construction stage** contractors are recommended to have more involvement with the top management level to adopt improved performance in the site. This must be achieved through cooperation with the supporting personnel team of workers. Overall monitoring is also recommended for all aspects, especially time and cost for different activities.

The performance regarding **principal measures**, (time, cost, quality and safety), are recommended to be improved through better *time* performance, planning and scheduling jobs, delay documentations and commitment to milestones defined for implementation. *Cost* monitoring must be improved by contractors during implementation, to stay within budget by adopting adequate financing arrangements. Value engineering is one of the modern professional procedures that may be adopted to guarantee commitment to budget.

To improve satisfaction of clients and consultants with the *quality* performance, modern quality assurance procedures such as ISO Standards are recommended to be a pre-requisite for qualifications and classifications of contractors. Contractors are also recommended to perceive quality as an essential dimension of achieving satisfaction through ensuring durability and reliability of the facility.

Safety considerations were perceived with very low levels of performance. Strict restrictions must be implied by local authorities to guarantee safe implementation of projects. It is recommended to have special amount of the budget for safety considerations by contractors. Contractors must have additional effort regarding awareness and training for safety issues. This will be the first step towards improving the safety culture within the working staff in construction sites.

The contractors are recommended to adopt new practices to improve the **resources management**. Partnering and joint venturing are recommended for improving the

resources and financial capabilities. This also includes providing adequate quality of qualified personnel, in addition to providing the required materials with adequate quality. The contractor should be able to provide the required resources of different types as required by the client or the consultant at any time. Clients are also recommended to have the least dependence on subcontractors to guarantee constant pattern of work flow.

Regarding the **site personnel**, the availability of highly qualified personnel was important for both clients and consultants. Professional project managers must be recruited in addition to highly qualified technical and managerial staffs. Special attention must be dedicated to the choice of in-site work supervisors and very highly skilled workers. This will support the improvement in the other aspects of implementation. Contractors are recommended to imply additional investment towards their personnel and human resources to improve their skills and level of performance in different issues (managerial, financial, technical… etc.). The quality and quantity of personnel and equipment must be suitable for the type and requirements of the project. Temporary staff members were perceived not suitable for construction projects and the salaries of the contractor's personnel should be studied and improved to be suitable for the living standards.

Contractors are recommended to provide adequate performance for the completion stage including **variations, drawings and handing over** with the main performance indicators. This must include processing the requested variations, completion of defects, preparation of drawings, and smoothness of handing over and settlement of final account of the project. This will guarantee more satisfaction for clients and consultants and will indicate the level of continuous care by contractors to satisfy the clients and the consultants. Contractors usually give the least attention and effort to the final stage of the project, by lower levels of resources and discarding completing the defects.

The last recommendation for contractors is to provide aesthetic satisfaction for both clients and consultants. This can be achieved by improving the **quality of the provided service**, through improving performance regarding some measures such as the ability to make rapid decisions, adequate documentation, commitment of key persons who are dealing directly with clients and consultants, speed of service and responsiveness to clients and consultants. This will give an image about the professionalism of the

contracting firm as a whole and will prove the commitment and reliability of it. Monitoring strategies and procedures should be adopted for the different aspects of implementation. The feedback mechanism within contracting firm must be defined to make use of the cumulative experience and problems to mitigate them in the future.

All the previous performance indicators must be supported with adequate **attitude** during implementation. Honesty, loyalty and integrity is the major indicators about the attitude of the contracting firm, in addition to cooperation and teamwork with both clients and consultants teams and not considering them as enemies through seeking variations or claims. The spirit of integrity was recommended to prevail in the project's environment, because every party must have the responsibility towards the whole process of construction.

The contractors are recommended to have friendly attitude with clients and their representatives. They are also recommended to give the feeling that the client's and consultants' satisfaction is a major objective for the contractor by exactly knowing the clients' aim and expectations from the project being implemented. Rapid response to the clients' and consultants' requirements is recommended. The human relations were perceived as a good tool for building trust between clients and consultants on one side and contractors on the other side, in addition to outstanding performance.

5.3.2 Recommendations for clients and consultants

The clients and consultants are recommended to change or modify procedures in order to enable earlier involvement of contractors in developing the client's brief. Clients and consultants are recommended to make use of the revealed agreement between them to define their corporate needs regarding satisfaction and communicate them with contractors through the Palestinian Contractors' Union (PCU). The following steps were recommended to be carried out by clients and consultants in cooperation with contractors, for achieving better levels of satisfaction. The three parties can cooperate through their representatives in the local market. These representatives are: Central Contracting Committee (CCC) should represent the public owners of projects, the Council of Engineering Offices and Consulting Firms should represent the consulting offices and

firms, and finally The Palestinian Contractors' Union (PCU) should represent the local contractors.

The first step will comprise adopting, discussing and agreeing about a group of reasonable, legal and acceptable improvement requirements by clients and consultants. The first step should be carried out in coordination and cooperation between three main parties representing the three key players in the construction industry. The Central Contracting Committee (CCC) should represent the public owners of projects, the Board of Engineering Offices and Consulting Firms should represent the consulting offices and firms, and finally The Palestinian Contractors' Union (PCU) should represent the local contractors. These requirements should be discussed and modified until agreed by the main parties.

The second step is to conduct a workshop to represent the main important requirements agreed by the main three parties. The contractors will be invited to attend this workshop and to clarify the benefits for clients, consultants and contractors through communicating the improvement requirements and obstacles between those parties. The improvement requirements will be discussed with contractors and feedback will contribute in finalizing the list of improvement requirements.

The last step will be conducted after the agreement regarding the improvement requirements. A capacity building program will be adopted according to the agreed fields that need improvement by contractors. The target group will be the contractors' personnel of different managerial levels and positions within the contracting firm. The target group will include:

- The top management levels of the project, through improving the managerial capabilities, delegation, decision making, estimating, value engineering, attitude, quality issues, and contractual aspects.
- The technical staff of engineers in both the office and the site will receive training that will consider major technical skills, attitude and spirit of team work, cooperation and other main administrative skills such as communications, reporting and documentation.

- The supporting staff should receive training to improve communication with higher levels of implementation team and how to deal with problems by improving the feedback to the decision making levels. They should receive training to improve their attitude in dealing with clients or consultants in the site.
- The labors should receive training to improve their performance regarding speed, working according to specifications based on the type of activity within the project. Awareness regarding waste control and consideration of safety precautions and personal protection tools and habits should be provided.

These programs should be applied as general guidelines for nay recruited subcontractors or suppliers to guarantee similar performance for all participants in the implementation process. This procedure should result an improved implementation process that can be evaluated through the evaluation framework described and discussed in section 5.5.2.

5.3.3 Recommendations to improve repetitive work opportunities

The contractors are recommended to be aware of the concept of repetitive work. They have to make use of their expertise to improve their performance through using the results of this research to define the fields that can bring satisfaction to clients and consultants. The use of this improvement must exceed the better image and reputation to having improved chances to do repetitive work with the same client. The maximum profit obtained through implementing one project for the client shall not be the only goal any more. The performance must be improved to the level that enforces the clients to rethink his procedures and common practices to make use of the contractor who is providing outstanding performance. This will guarantee best value of money and reliable provider of the construction service.

5.4 Framework development for satisfaction improvement

Figure 5.2 describes the results as a proposed framework. The developed framework was discussed in two main groups. The first group considered the main practical aspects of performance to be evaluated. The second group considered the aesthetic issues including culturally affected attitude and personal habits during implementation. The evaluation framework applied the categorization adopted in the questionnaire. The framework is described in details in the following sub-sections.

5.4.1 Practical aspects (direct issues)

These issues consider practical indicators and measures that can be judged through the in site performance. The discussion of the framework will adopt the categorization of the questionnaire for satisfaction statements, to reach an enhanced level of performance.

a. Pre-construction stage

The clients and consultants perceived that they will be satisfied with the contractors' performance in this stage if some actions were considered seriously. Better understanding of the contract conditions was the most important in this stage. This will lead the contractor to prepare an executable work plan which is suitable for the type of project, in addition to the reasonable time schedule. In this stage it is also important to provide a reasonable price for the work by the contractor. Commitment with all these statements will guarantee satisfaction in the pre-construction stage.

b. Construction stage

During the construction, clients and consultants were found to be interested in noticing some issues, which are general guidelines to control the construction process. The involvement of the top management level gives indication about commitment of the contracting firm.

The flow of information between the different levels of managerial and technical staffs is very important to achieve satisfaction for both clients and consultants. This will enable control on activities, processes and the accompanying costs. This includes dealing with variations and complaints. The site organization also indicates high levels of professionalism and by the way leads to satisfaction.

c. Principal measures

Clients and consultants were found to be satisfied if the contractors provided better performance regarding the principal measures of the implemented project. These were: time, cost, quality and safety.

To achieve better satisfaction, contractors are required to finish the project on time through a precise schedule. The variations are required to be scheduled rapidly without affecting the overall progress. The contractors are required to adopt the suitable mechanisms to finish as soon as possible with sufficient documentation and explanation for any delay that occurs.

Regarding the cost, to satisfy clients and consultants, the contractors are required first to finish the project within the adopted budget. The contractors are also required to adopt the suitable techniques and procedures to achieve best cost performance, through cost control and reduction of wastes.

The selection between the available options in the market is required by contractors to find the optimum combination of resources, such as quality, and time. The value engineering can provide a suitable choice for improving this factor of cost performance.
Considering the quality by contractors every activity and assuring quality of the different components of the projects' physical measures and especially the quality of the end product through quality assurance procedures. All of these issues were found major issues to achieve clients' and consultants' satisfaction as revealed in this study.

Contractors are required to consider safety issues to achieve improved levels of clients' and consultants' satisfaction. This can be achieved through improving the culture of safety between the site personnel by providing safety training. This is required to be supported by providing personal protection equipment, first aid supplies and safety plan and safety personnel.
All of these issues can guarantee the satisfaction by clients and consultants in addition to other improvements required by contractors.

d. Resources management

The resources management is a very important issue in the construction process. The better resources available the higher level of satisfaction is obtained. The contractors are required to provide the maximum resources in the site and at the same time are required to have adequate financial capabilities. This includes equipment, personnel and materials.

This can be supported by best knowledge of the market, suppliers and subcontractors. This will guarantee achieving the expected satisfaction for clients and consultants.

e. Personnel management

Special attention must be given by contractors to the personnel management. This group was the most important for clients and the fourth regarding importance to consultants. The contractors are required to define the authorities for the site personnel especially the mangers. From the beginning the recruitment of the personnel must be based on their skills and professionalism. The contractors are required to provide awareness to their personnel regarding cooperation and commitment to the goals of the project. The contractors must know that the humanitarian part is very important in the construction project implementation process, so they are required to choose suitable people to represent them during the whole process.

f. Variations, drawings and handing over

This group of factors was also one of the most important groups in this research. Clients considered it as the third important, while consultants considered it the most important. To satisfy both the clients and the consultants regarding variations, drawings and handing over the contractors are required to provide smooth process in completing defects, preparation of as built drawings, settlement of final account of the project, and finally handing over. This is very important especially in late stages of implementation, and will give good impression that is the nearest to be remembered by clients and consultants. Because, one bad experience at the end of the project, will tarnish the good experience in the earlier stages of implementation.

5.4.2 Aesthetic aspects

The aesthetic issues related to implementation are discussed here to provide the contractors with some ideas for achieving clients' and consultants' satisfaction during implementation, other than the direct issues discussed in the previous section. Two issues are discussed below, these are: attitude and quality of service. These issues will surround the process with positive environment that will highly influence the overall process from the beginning to the end.

a. Attitude

This group contained a number of issues that were very important for clients and consultants. The contractors are required to keep honest attitude which was one of the most important factors through this study. The contractors are required to be cooperative, responsive, responsible, courteous, friendly and proactive in dealing with clients' and consultants' complaints.

Better knowledge of the requirements of the client is also required. Communication is required with clients and consultants all of the time and keeping them informed with every issue, and providing them with the justifications for complaints, through simple procedures and with full attention. The clients and consultants will be more satisfied if claims were avoided during the project implementation.

b. Quality of service evaluation

This group defines the characteristics of the service provided by contractors to meet clients' and consultants' requirements, and by the way their satisfaction. This study revealed that the contractors are required to have rapid decisions, and speed with reliable responses to clients' or consultants' complaints. Adequate documentation is also required for well organized information flow during implementation. The contractors are also required to provide accessibility to site personnel and at the same time hospitality with clients and consultants.

5.4.3 Overall Evaluation

The two previously discussed factors will be given scores by the evaluators, either clients' or consultants' representatives. These results are transferred as feedback information for the decision makers to take a decision out of two options:

A. *Satisfied ➔ expectations are met or exceeded, so the contractor under consideration is considered as a potential choice for future projects by the evaluating party or the contractor may benefit from any new procedures based on the achieved impression.*

B. *Dissatisfied ➔ expectations were not met, so the contractor under consideration is excluded from future choices for projects by the evaluating party.*

The different scores for the same contractor establish an additional measure for choosing between contractors in the future, and provide the contractor with feed back about his performance and the required improvements.

Figure 5. 1: Proposed evaluation framework.

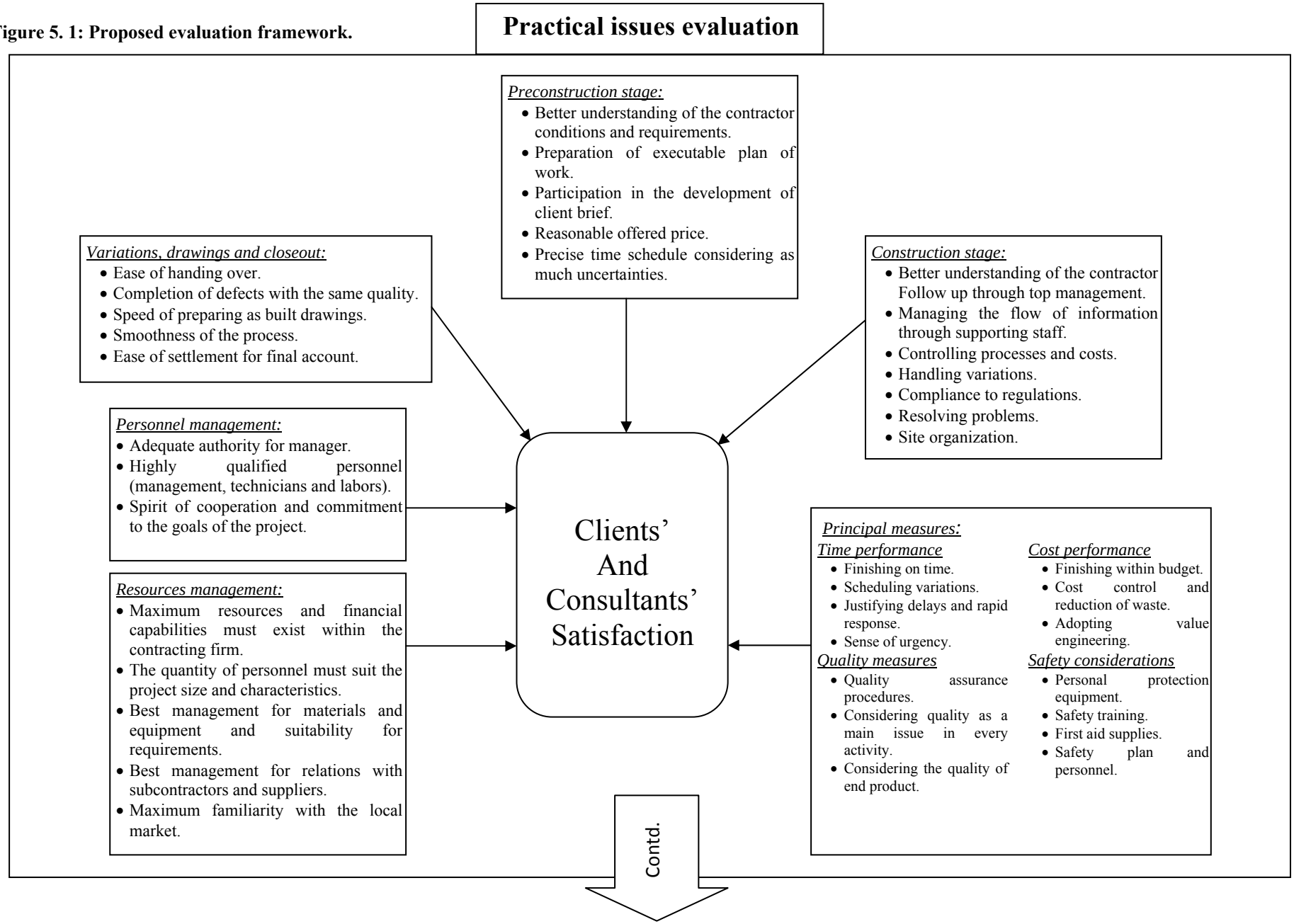
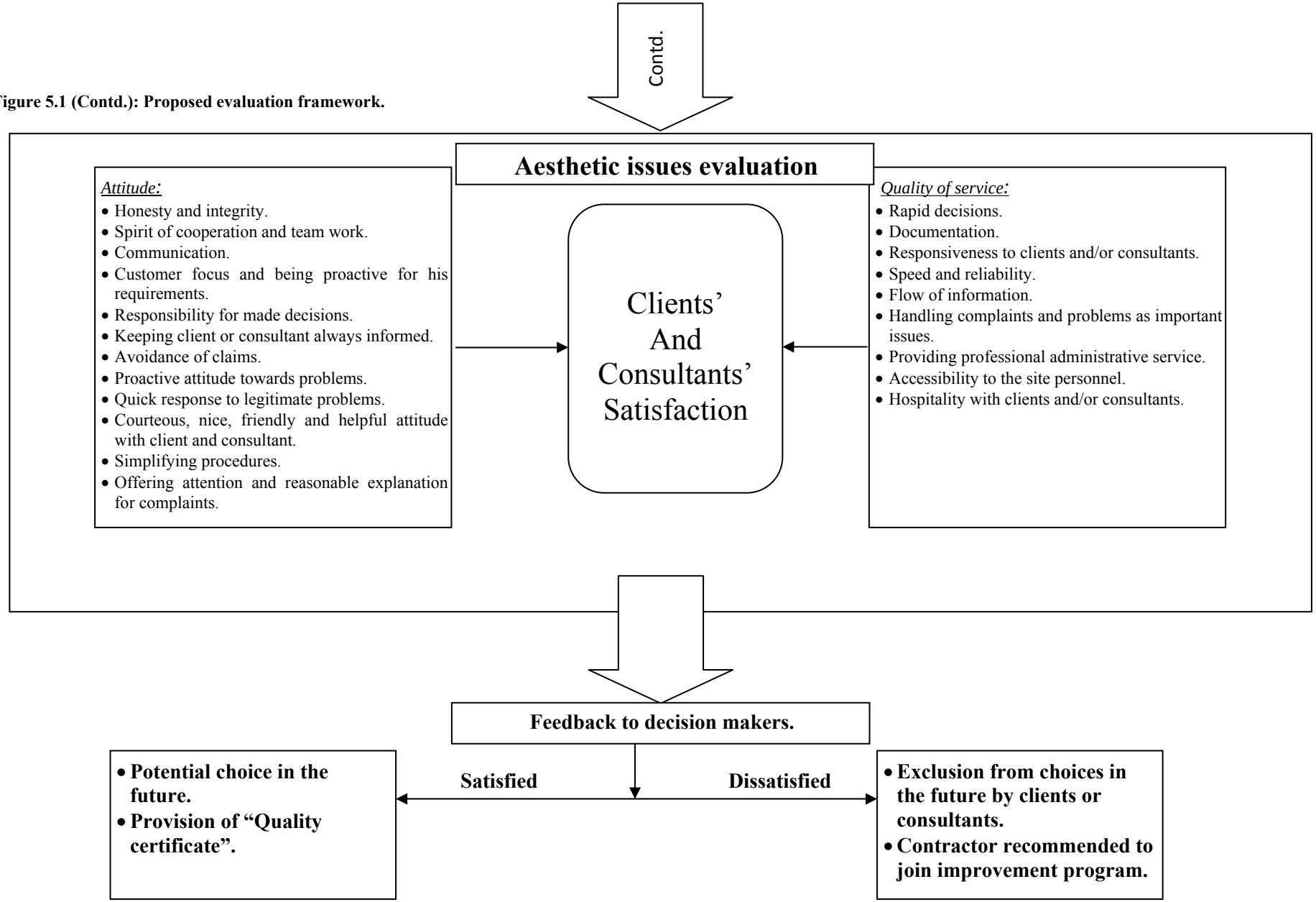


Figure 5.1 (Contd.): Proposed evaluation framework.



5.5 Recommendations for future studies

1. These factors can be studied using different approach and different kind of data analysis to be transformed to a computerized interface that provides quantitative measures of the satisfaction level.
2. The satisfaction of private clients with the locally provided construction service.
3. The satisfaction of non-governmental organizations implementing projects locally.
4. Adoption of quality assurance standards and its effect on dissatisfaction locally.

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Annex (1): The Questionnaire prepared for the study

الجامعة الإسلامية - غزة
عمادة الدراسات العليا

قسم الهندسة المدنية – كلية الهندسة
برنامج الماجستير
إدارة التشييد

إستبانة بخصوص

دراسة تحليلية لاحتياجات ومدى رضا المالك في صناعة الإنشاءات في قطاع غزة

وذلك جزء من البحث التكميلي لنيل درجة الماجستير في إدارة المشروعات الهندسية

الباحث: *رائف الشرفا*

المشرف: الأستاذ الدكتور *عدنان إنشاصي*
أستاذ إدارة المشروعات الهندسية

غزة – نوفمبر، 2006

استبيان بخصوص

دراسة تحليلية لاحتياجات ومدى رضى المالك في صناعة الإنشاءات في قطاع غزة

الأخ الفاضل،،،

مرفق طيه الاستبانة الخاصة بدراسة تحليلية لاحتياجات ومدى رضى المالك في صناعة الإنشاءات في قطاع غزة، والتي أقوم بها للحصول على درجة الماجستير في الهندسة المدنية تخصص إدارة التشييد. وفي هذا السياق أود التعبير عن امتناني وتقديري وشكري الجزيل لتمكنكم من منح الاستبانة وقتكم لتعبئتها.

تنقسم الاستبانة إلى ثلاث مجموعات من المعلومات؛ **الأولى** عبارة عن معلومات عامة عن الطرف الذي يقوم بالتعبئة ومؤسسته، و **الثانية** تتعلق بصميم الموضوع، وهي بدورها تنقسم إلى ثمانية مجموعات رئيسية، وكل مجموعة تحتوي على عدد من العوامل الفرعية و التي نحن بصدد قياسها وربطها مع بعضها البعض في السوق المحلي لمعرفة علاقتها مع بعضها وتأثير كل منها على الآخر. وذلك للمساعدة في الوصول إلى أساس لقياس مدى رضى المالك و الاستشاري عن أداء المقاولين في السوق المحلي. وذلك من خلال استبيان أهمية كل عامل من العوامل المذكورة من وجهة نظر المالك والاستشاري وأيضا مدى كفاءة أداء المقاول من وجهة نظر المالك و الاستشاري للعوامل التي سيتم تفصيلها لاحقاً في الاستبانة. أما **الثالثة** فتعنى بتقصي ودراسة أثر رضى المالك والاستشاري عن أداء المقاول على العلاقة المستقبلية معه وإمكانية وجود شراكة مستمرة فيما بعد أو أولوية للمقاول كخيار في الأعمال اللاحقة.

هذا مع العلم بأن المعلومات التي ستتم تعبئتها في الاستبانة المرفقة، سوف تستخدم للأغراض البحثية والعلمية المحضة.

وتفضلوا بقبول فائق الاحترام و التقدير.

الباحث / رائف الشرفا

أولاً: معلومات عامة - يرجى وضع علامة (✓) أمام الخيار المناسب.

1. *معبيء الاستبانة (معلومات شخصية):*

المؤسسة: _____

الخبرة: (للموظف معبئ الاستبانة)

أقل من 5 سنوات	6 – 10 سنوات	11 – 20 سنة	أكثر من 20 سنة

2. *نوع المشاريع المنفذة من خلال المؤسسة:* **(يمكن اختيار أكثر من خيار)**

إسكان	منشآت عامة	طرق وبنية تحتية	مياه وصرف صحي	منشآت خاصة
غير ذلك، حدد.				

3. *القيمة التقديرية للمشاريع المنفذة من قبل المؤسسة للسنوات الخمسة الأخيرة (بالدولار الأمريكي):*

أقل من 1/2 مليون	1/2 إلى 0.99 مليون	1 إلى 2.99 مليون	3 إلى 4.99 مليون	5 مليون فأكثر

4. *الموقع الوظيفي:*

مدير مشاريع	مهندس إشراف	رئيس قسم	مهندس مكتب	خبير توريدات
غير ذلك، حدد.				

تعريفات:

الأهمية: يعنى هذا العامود من الاستبانة بقياس أهمية العوامل المختلفة المذكورة من الناحية النظرية، وذلك بالنسبة للمالك والاستشاري كممثل للمالك، و القياس مبني على أساس مقياس من خمسة درجات لكل منها معنى حسب ما يظهر تحت كل تسمية.

الأداء: يعنى هذا العامود من الاستبانة بقياس تقدير المالك و الاستشاري لمدى كفاءة المقاول في الأداء العملي الواقعي من تجاربهم السابقة لكل من العوامل المذكورة تحت الفئات الثمانية الأساسية. و القياس مبني على أساس مقياس من خمسة درجات لكل منها معنى حسب ما يظهر تحت كل تسمية.

ثانياً: عناصر رضا المالك والاستشاري:

م.	عوامل رضا المالك	الأهمية من الناحية النظرية **يرجى اختيار الرقم المعبر عن مدى أهمية العامل المذكور من وجهة نظرك.** غير مهم إطلاقاً	غير مهم	متوسط	مهم	مهم جدا	الأداء بناء على خبرات سابقة **يرجى اختيار الرقم المعبر عن تقييمك لأداء المقاول للعامل المذكور من وجهة نظرك.** غير مرض إطلاقاً	غير مرض	متوسط	مرض	مرض تماماً
أ- *مرحلة ما قبل التنفيذ:* (بعد الترسية) (Pre-Construction Stage – After awarding)											
1	المقابلة الأولى بين المقاول و(المالك أو الاستشاري) وعرض تصور تنفيذ المشروع من قبل المقاول.	1	2	3	4	5	1	2	3	4	5
2	القدرة الفنية والاستعداد للمساعدة في تطوير متطلبات المشروع المعدة من المالك و الاستشاري.	1	2	3	4	5	1	2	3	4	5
3	المساهمة بإبداء الرأي في التصميم والتنفيذ.	1	2	3	4	5	1	2	3	4	5
4	خطة العمل و التسلسل المقترح لتنفيذ أنشطة المشروع.	1	2	3	4	5	1	2	3	4	5
5	فهم العقد والمواصفات الفنية.	1	2	3	4	5	1	2	3	4	5
6	مشاركة المقاول في الشرح المسبق لآليات التنسيق بين أطراف المشروع.	1	2	3	4	5	1	2	3	4	5
7	التقديرات المنطقية للتكاليف و الوقت اللازمين عند طلب مباشرة العمل.	1	2	3	4	5	1	2	3	4	5
8	سعر المقاول مقارنة بتقديرات المالك أو الاستشاري لتجنب الزيادات و التغييرات المستقبلية.	1	2	3	4	5	1	2	3	4	5
9	الضمانات المختلفة التي يقدمها المقاول للمالك علاوة على الشروط التعاقدية.	1	2	3	4	5	1	2	3	4	5
ب- *مرحلة التنفيذ:* (Construction Stage)											
1	الإدارة العليا للموقع إدارياً و لوجستياً.	1	2	3	4	5	1	2	3	4	5
2	الطاقم المشرف من قبل المقاول وتحكمه بسير الأنشطة.	1	2	3	4	5	1	2	3	4	5
3	ترتيب الموقع وتنظيمه ونظافته.	1	2	3	4	5	1	2	3	4	5
4	القدرة على التخطيط والجدولة بشكل مناسب زمنياً ومن حيث الموارد اللازمة.	1	2	3	4	5	1	2	3	4	5
5	الالتزام باللوائح والقوانين المعتمدة محلياً في مجالات العمل.	1	2	3	4	5	1	2	3	4	5
6	تحديث الجدول الزمني للأعمال حسب الإنجاز الفعلي وتجهيز قوائم دورية بالأعمال المطلوب إنجازها وحالتها.	1	2	3	4	5	1	2	3	4	5
7	تحليل و تفسير المشاكل التي تحدث للوصول إلى أفضل الحلول.	1	2	3	4	5	1	2	3	4	5
8	التحكم بسير المشروع والمراقبة المستمرة للأنشطة والتكاليف الملحقة. (حوسبة، توثيق، تدقيق خارجي)	1	2	3	4	5	1	2	3	4	5
9	طريقة العمل المتبعة وتقنيات التنفيذ المستخدمة.	1	2	3	4	5	1	2	3	4	5

م.	عوامل رضا المالك	الأهمية من الناحية النظرية **يرجى اختيار الرقم المعبر عن مدى أهمية العامل المذكور من وجهة نظرك.** غير مهم إطلاقاً	غير مهم	متوسط	مهم	مهم جداً	الأداء بناء على خبرات سابقة **يرجى اختيار الرقم المعبر عن تقييمك لأداء المقاول للعامل المذكور من وجهة نظرك.** غير مرض إطلاقاً	غير مرض	متوسط	مرض	مرض تماماً
	ت- *العناصر الأساسية لإدارة المشروع*: (Principal Measures)										
	ت – 1 - الالتزام بالجدول الزمني (الأداء المتعلق بالزمن). ((Adherence to schedule (*time* performance))										
1	إعطاء أولوية للأنشطة المختلفة حتى الصغيرة منها.	1	2	3	4	5	1	2	3	4	5
2	التخطيط والجدولة السريعة للأعمال في حال التغيير أو التأخير أو الطوارئ ووضع خطط بديلة.	1	2	3	4	5	1	2	3	4	5
3	إنهاء الأنشطة بسرعة إذا تم البدء بها.	1	2	3	4	5	1	2	3	4	5
4	الاستجابة المباشرة للاستفسارات بخصوص تقدم وحالة الأعمال.	1	2	3	4	5	1	2	3	4	5
5	الحرص على تنفيذ الأعمال بالسرعة القصوى الممكنة.	1	2	3	4	5	1	2	3	4	5
6	الحرص على توثيق الملاحظات والتفسيرات لأي تأخير يحصل.	1	2	3	4	5	1	2	3	4	5
7	إنهاء المشروع في الوقت المحدد.	1	2	3	4	5	1	2	3	4	5
	ت – 2 - الالتزام بالميزانية المحددة (الأداء المتعلق بالكلفة). ((Adherence to budget (*cost* performance))										
1	استخدام هندسة القيمة لتقليل التكاليف بالاختيار الأمثل للبدائل المتوفرة.	1	2	3	4	5	1	2	3	4	5
2	استخدام تقنية التحكم والمراقبة للتكاليف للبقاء ضمن الميزانية.	1	2	3	4	5	1	2	3	4	5
3	تقليل الفاقد إلى أقل ما يمكن.	1	2	3	4	5	1	2	3	4	5
4	توفير الترتيبات والآليات الكفء للإدارة المالية.	1	2	3	4	5	1	2	3	4	5
5	إنهاء المشروع في حدود الميزانية.	1	2	3	4	5	1	2	3	4	5
	ت – 3 - جودة الأعمال المنفذة و المهارات المستخدمة (الأداء المتعلق بمقاييس الجودة). (*Quality* of construction and workmanship)										
1	إعطاء الأولوية القصوى لمقاييس أداء المنشأة وأخذها في الاعتبار أثناء تنفيذ المشروع.	1	2	3	4	5	1	2	3	4	5
2	إعطاء أداء متماثل في التنفيذ العناصر الرئيسية والثانوية في المشروع أو المنشأة.	1	2	3	4	5	1	2	3	4	5
3	بذل أقصى مجهود للتوافق مع أو الزيادة عن المواصفات المحددة.	1	2	3	4	5	1	2	3	4	5
4	التأكد من ديمومة واختبار أداء المنشأة كجزء من أداء المقاول.	1	2	3	4	5	1	2	3	4	5
5	إعطاء الأهمية للجوانب النفسية والحسية والشكلية للمنشأة.	1	2	3	4	5	1	2	3	4	5
6	اعتبار المقاول لجودة العمل كمحدد أساسي لرضى المالك عن العمل.	1	2	3	4	5	1	2	3	4	5
7	تطبيق إجراءات ضمان الجودة. (فحوصات، اختبارات صيانة)	1	2	3	4	5	1	2	3	4	5
	ت – 4 - الالتزام بمعايير السلامة والأمان. (*Safety* measures and standards.)										
1	توفر معدات الحماية الشخصية للعمال في الموقع. (PPE)	1	2	3	4	5	1	2	3	4	5
2	توفر المواد والمعدات اللازمة للإسعافات الأولية.	1	2	3	4	5	1	2	3	4	5
3	اعتماد تدريب على احتياطات ووسائل الأمان في الموقع للعمال المستخدمين في الموقع.	1	2	3	4	5	1	2	3	4	5
4	الاجتماعات الدورية بطاقم العمل و التأكيد على ممارسات الأمان.	1	2	3	4	5	1	2	3	4	5
5	التزام الإدارة العليا لمؤسسة المقاول بسياسة عامة للأمان في الموقع.	1	2	3	4	5	1	2	3	4	5
6	توثيق الحوادث الحاصلة وتقصي المسببات وسبل تفاديها في المستقبل.	1	2	3	4	5	1	2	3	4	5
7	توفر مراقب عام للأداء الآمن في الموقع.	1	2	3	4	5	1	2	3	4	5
8	وضع خطة مسبقة للأمان في الموقع حسب متطلبات العمل.	1	2	3	4	5	1	2	3	4	5
9	تطبيق لوائح وتعليمات الأمان المتبعة محلياً في موقع العمل.	1	2	3	4	5	1	2	3	4	5

م.	عوامل رضا المالك	الأهمية من الناحية النظرية **برجى اختيار الرقم المعبر عن مدى أهمية العامل المذكور من وجهة نظرك.** غير مهم إطلاقاً	غير مهم	متوسط	مهم	مهم جداً	الأداء بناء على خبرات سابقة **برجى اختيار الرقم المعبر عن تقييمك لأداء المقاول للعامل المذكور من وجهة نظرك.** غير مرض إطلاقاً	غير مرض	متوسط	مرض	مرض تماماً
ث- *إدارة الموارد:* (Resources Management)											
1	الإدارة الجيدة للمواد وتوفرها عند الحاجة.	1	2	3	4	5	1	2	3	4	5
2	إدارة القوة العاملة (عدد، كفاءة، عدة).	1	2	3	4	5	1	2	3	4	5
3	الإدارة الجيدة لاستخدام الآليات و المعدات.	1	2	3	4	5	1	2	3	4	5
4	إدارة والتنسيق بين مقاولي الباطن والموردين.	1	2	3	4	5	1	2	3	4	5
5	الدفعات المنتظمة لمقاولي الباطن والموردين في موعدها.	1	2	3	4	5	1	2	3	4	5
6	كفاءة وملائمة طاقم المقاول في الموقع.	1	2	3	4	5	1	2	3	4	5
7	الاهتمام بما يتعلق بالمحافظة على البيئة في الموقع أثناء التنفيذ.	1	2	3	4	5	1	2	3	4	5
8	توفر الموارد والقدرة المالية.	1	2	3	4	5	1	2	3	4	5
9	نوع العمل و ملائمة الأدوات والآليات لموقع العمل.	1	2	3	4	5	1	2	3	4	5
10	اعتياد المقاول على التعامل مع الموردين والعمال ومقاولي الباطن المحليين.	1	2	3	4	5	1	2	3	4	5
ج- *الموارد البشرية في الموقع:* (Site Personnel)											
1	التعاون مع المالك أو ممثل المالك من قبل المقاول.	1	2	3	4	5	1	2	3	4	5
2	الكفاءة في الأداء والقدرات الفردية لأفراد طاقم المقاول.	1	2	3	4	5	1	2	3	4	5
3	أداء مدير المشروع وملائمة التفويض والسلطة الممنوحة له.	1	2	3	4	5	1	2	3	4	5
4	وضع وطبيعة الموقع أثناء العمل وطبيعة الضوضاء المتولدة.	1	2	3	4	5	1	2	3	4	5
5	توفر الطاقم الفني المؤهل في مؤسسة المقاول.	1	2	3	4	5	1	2	3	4	5
6	توفر المهارات والكفاءات الإدارية في طاقم المقاول ومؤسسته.	1	2	3	4	5	1	2	3	4	5
7	مهارات المشرفين على التنفيذ لدى المقاول. (الفنيين التنفيذيين)	1	2	3	4	5	1	2	3	4	5
8	مهارات وكفاءة العمال المتوفرين لدى المقاول.	1	2	3	4	5	1	2	3	4	5
9	التزام طاقم المقاول بتحقيق الأهداف المطلوبة من خلال العمل.	1	2	3	4	5	1	2	3	4	5
10	قدرة طاقم المقاول على التعاون فيما بينهم.	1	2	3	4	5	1	2	3	4	5
11	التزام مقاولي الباطن مع المقاول الأساسي.	1	2	3	4	5	1	2	3	4	5
ح- *التغييرات و الرسومات والتسليم النهائي:* **(Variations, drawings and handing over)**											
1	الاتفاق على التغيرات وسلاسة التفاهم حولها وسرعة ومرونة تنفيذها.	1	2	3	4	5	1	2	3	4	5
2	إعداد الرسومات المبدئية والتنفيذية. (السرعة و الدقة)	1	2	3	4	5	1	2	3	4	5
3	المساهمة في إعداد الرسومات التصميمية التنفيذية النهائية في حال حدوث تغيير.	1	2	3	4	5	1	2	3	4	5
4	مرحلة التشطيبات النهائية و إتمام الأعمال وسهولة التسليم وسلاسته سرعة وسهولة إنهاء الحسابات والمخالصات المتعلقة بالمشروع.	1	2	3	4	5	1	2	3	4	5
5	إتمام الإصلاحات ومعالجة الأخطاء والملاحظات قبل التسليم المبدئي و النهائي.	1	2	3	4	5	1	2	3	4	5
6	سلاسة التسليم والتشغيل.	1	2	3	4	5	1	2	3	4	5
7	جودة وثائق التسليم النهائي (أدلة الصيانة والتشغيل).	1	2	3	4	5	1	2	3	4	5
8	الشعور العام حول سرعة عمل التغييرات وسلاسة التسليم.	1	2	3	4	5	1	2	3	4	5

م.	عوامل رضا المالك	الأهمية من الناحية النظرية **يرجى اختيار الرقم المعبر عن مدى أهمية العامل المذكور من وجهة نظرك.**					الأداء بناء على خبرات سابقة **يرجى اختيار الرقم المعبر عن تقييمك لأداء المقاول للعامل المذكور من وجهة نظرك.**				
		غير مهم إطلاقاً	غير مهم	متوسط	مهم	مهم جدا	غير مرض إطلاقاً	غير مرض	متوسط	مرض	مرض تماماً
خ- جودة الخدمة المقدمة: (Quality of Service)											
1	فاعلية التعامل مع الشكاوى المقدمة من المالك أو الاستشاري.	1	2	3	4	5	1	2	3	4	5
2	توثيق المراسلات والمكالمات الخاصة بالعمل أثناء التنفيذ في المراحل المختلفة.	1	2	3	4	5	1	2	3	4	5
3	سرعة وكفاءة الخدمة المقدمة من قبل المقاول.	1	2	3	4	5	1	2	3	4	5
4	التجاوب مع المالك ومتطلباته المختلفة.	1	2	3	4	5	1	2	3	4	5
5	القدرة على اتخاذ القرارات بسرعة ودقة.	1	2	3	4	5	1	2	3	4	5
6	التزام الطواقم الأساسية في العمل (نشاط ، استمرارية).	1	2	3	4	5	1	2	3	4	5
7	اللباقة في الضيافة في التعامل مع المالك وممثليه.	1	2	3	4	5	1	2	3	4	5
8	الإدارة العامة لمختلف متعلقات تنفيذ المشروع.	1	2	3	4	5	1	2	3	4	5
9	الاندماج في المشاكل والتعامل معها باهتمام.	1	2	3	4	5	1	2	3	4	5
10	المساعدة في إتمام الأعمال الورقية المشتركة مع المالك والاستشاري.	1	2	3	4	5	1	2	3	4	5
11	تعديل وتصحيح الأخطاء والملاحظات أثناء التسليم النهائي.	1	2	3	4	5	1	2	3	4	5
12	تبادل المعلومات وتناقلها في موقع المشروع.	1	2	3	4	5	1	2	3	4	5
13	إمكانية وصول المالك لموظفي المقاول حسب اختلاف اختصاصاتهم لعمل تعديل معين أو إجابة استفسار معين بالسرعة اللازمة وتحديد مسئولياتهم.	1	2	3	4	5	1	2	3	4	5
د- طبيعة التعامل أثناء الخدمة: (Attitude)											
1	الأمانة في العمل والتكامل في أداء طاقم المقاول.	1	2	3	4	5	1	2	3	4	5
2	روح التعاون وروح الفريق.	1	2	3	4	5	1	2	3	4	5
3	الحرص على فهم متطلبات المالك مسبقا.	1	2	3	4	5	1	2	3	4	5
4	إبقاء المالك على علم بكافة متعلقات العمل.	1	2	3	4	5	1	2	3	4	5
5	الاتصال و بسهولة بين الأطراف المختلفة.	1	2	3	4	5	1	2	3	4	5
6	الجاهزية المسبقة للتعامل مع أي مشكلة قبل وقوعها.	1	2	3	4	5	1	2	3	4	5
7	تفادى الخلافات و المطالبات وليس التربص بها واختلاقها.	1	2	3	4	5	1	2	3	4	5
8	المسئولية عن القرارات المختلفة المتخذة أثناء العمل.	1	2	3	4	5	1	2	3	4	5
9	إظهار التعاون والاهتمام في التعاملات مع المالك وممثليه في المتطلبات المختلفة.	1	2	3	4	5	1	2	3	4	5
10	تبسيط الإجراءات لتفادي المشاكل.	1	2	3	4	5	1	2	3	4	5
11	إبداء الاهتمام بالشكاوى حسب الاختصاص والأولوية.	1	2	3	4	5	1	2	3	4	5
12	إعطاء تفسير منطقي للمشاكل الحاصلة وتوضيحها للمالك.	1	2	3	4	5	1	2	3	4	5
13	التعامل مع الملاحظات بجدية وسرعة إنجازها.	1	2	3	4	5	1	2	3	4	5
14	التجاوب بسرعة مع الشكاوى المنطقية المشروعة من قبل المالك.	1	2	3	4	5	1	2	3	4	5
15	التعامل بتناغم وتكامل وتعاون مع الاستشاريين.	1	2	3	4	5	1	2	3	4	5

ثالثاً: علاقة رضا المالك و الاستشاري بتكرار استخدام المقاول:

5. "هناك حرص من قبل المقاولين المحليين على إرضاء المالك و الاستشاري من خلال السعي وراء الأداء المتميز". ما رأيك في العبارة السابقة ؟

أعارض بشدة ☐ أعارض ☐ متعادل ☐ أوافق ☐ أوافق بشدة ☐

6. "حِرص المقاول على إرضاء المالك و الاستشاري يؤثر على كفاءة مستوى الأداء أثناء التنفيذ". ما رأيك في العبارة السابقة ؟

أعارض بشدة ☐ أعارض ☐ متعادل ☐ أوافق ☐ أوافق بشدة ☐

7. "يؤثر مدى رضى المالك والاستشاري عن أداء المقاول في مشاريع سابقة، على اختياره عند تقدمه للعمل في مشروع آخر عن طريق مناقصة". ما رأيك في العبارة السابقة ؟

أعارض بشدة ☐ أعارض ☐ متعادل ☐ أوافق ☐ أوافق بشدة ☐

8. "يؤثر مدى رضى المالك عن أداء المقاول في المشاريع المسابقة على إمكانية وجود شراكة مستمرة مستقبلاً وتكراراً الاستخدام لهذا المقاول؛ أي بعبارة أخرى تكليف بدون تناقص". ما رأيك في العبارة السابقة ؟

أعارض بشدة ☐ أعارض ☐ متعادل ☐ أوافق ☐ أوافق بشدة ☐

9. من وجهة نظرك – (على شكل نقاط إن أمكن). ما هو المطلوب من المقاولين المحليين للوصول إلى أداء متميز ومرض لكل من المالك والاستشاري و أيضاً لبناء علاقات متميزة مع كل منهما للحصول على ميزة تنافسية أعلى تؤدي إلى شراكة مستمرة مستقبلاً ؟

The Islamic University - Gaza

Civil Engineering Department

Master Program – Construction Management

Questionnaire

For the thesis titled

"Analysis of clients' needs and satisfaction in the construction industry in Gaza Strip"

In partial fulfillment of the requirement for earning M.Sc. Degree
in
Construction management

Researcher: Raif Al-Shorafa

Supervisor: Prof. Dr. Adnan Enshassi

Student No.: 7694/2003

Gaza - Dec., 2006

Questionnaire about clients' needs and satisfaction in the construction industry in Gaza Strip

Dear Sir,

Attached please find a copy of a questionnaire, which is a requirement for completing my study of the clients' needs and satisfaction in the construction industry in Gaza Strip. I will be really grateful if you could give some of your time to fill this questionnaire, and accept my appreciation. The information that you will provide through that form are really valuable for the study, and they will be confident and for research considerations only.

The questionnaire is divided into three categories of information; **The First** is general information regarding the person filling the questionnaire and his organization. **The Second** contains the different categories and sub-categories of satisfaction statements and factors to measure their relation to each other, and to investigate the importance of each factor and the level of satisfaction provided by contactors in each factor and each category. **The Third** and last category of information investigates the effect of the level of client satisfaction in the local construction industry on the approach of doing repetitive work with the same contractor in the future.

Finally, I would really like to thank you for your kind patience, time and cooperation, and accept my best regards.

Raif Al-Shorafa

First: General Information – Tick (✓) on the suitable choice.

1- Applicant:

Organization : _____.
Experience : (Applicant)

Less than 5 years	6-10 years	11-20 years	More than 20 years

2 - Types of implemented projects through your organization (multiple choice allowed).

Housing	Public building	Roads & infrastructure	Water & wastewater	Private buildings
Other, Please Specify				

3 - The average annual value for the implemented projects through your organization over the last five years (construction cost)
/ (where M=Million in $)

Less than 0.5M	0.5M – 0.99M	1 M – 2.99M	3 M – 4.99 M	More than 5 M

4 - Which best describe your occupation/position in your organization?

Project Manager	Construction Supervisor	Head of Department	Office Engineer	Procurement Specialist
Other, Please Specify				

Definitions:

Importance: This column aims to measure the importance of the different factors listed with respect to the clients and consultants point of view. This measurement is based on a 1 – 5 scale. where (1) means "Totally not important" and (5) means " Totally important".

Performance: This column aims to measure the performance of the different factors listed with respect to the clients' and consultants' perception of the level of performance provided by local contractors. This measurement is based on a 1 – 5 scale, where (1) means "very unsatisfied" and (5) means "very satisfied".

Second: - Satisfaction criteria for clients and consultants

No.	Factor	Importance (Ideal)					Performance (based on previous experience)				
		You may choose the no. that indicates the importance of the factor.					You may choose the no. that indicates the performance provided by the contractor.				
		Totally Not Important	Not Important	Average	Important	Totally Important	Very unsatisfied	unsatisfied	Average	satisfied	Very satisfied
A. Pre-construction stage: *(After Awarding)*											
1	First interview and presentation of the implementation approach.	1	2	3	4	5	1	2	3	4	5
2	Ability and willingness to help develop the client brief of the project.	1	2	3	4	5	1	2	3	4	5
3	Contribution to design and buildability of project.	1	2	3	4	5	1	2	3	4	5
4	Plan of work and method statement.	1	2	3	4	5	1	2	3	4	5
5	Understanding of contract and specifications.	1	2	3	4	5	1	2	3	4	5
6	Completely explain administration policies, procedures and coordination requirements before commencement.	1	2	3	4	5	1	2	3	4	5
7	Providing a reasonable estimate of work and defining milestones, when requests for starting work are issued.	1	2	3	4	5	1	2	3	4	5
8	The price offered by the contractor's firm compared to the client's estimate).	1	2	3	4	5	1	2	3	4	5
9	Warranty conditions of the contractor firm offers.	1	2	3	4	5	1	2	3	4	5
B. Construction											
1	Managing the site through top management level.	1	2	3	4	5	1	2	3	4	5
2	Site supervision and control through supporting personnel level.	1	2	3	4	5	1	2	3	4	5
3	Site organization, tidiness and cleanliness.	1	2	3	4	5	1	2	3	4	5
4	Ability to plan and programme properly.	1	2	3	4	5	1	2	3	4	5
5	Compliance to local national regulations and guidelines.	1	2	3	4	5	1	2	3	4	5
6	Providing updates on work as it progresses and providing periodic listing of all work orders and their status.	1	2	3	4	5	1	2	3	4	5
7	Explaining what was done to solve a particular problem.	1	2	3	4	5	1	2	3	4	5
8	Project control, monitoring process and cost control.	1	2	3	4	5	1	2	3	4	5
9	Proposed construction method.	1	2	3	4	5	1	2	3	4	5

No.	Factor	Importance (Ideal)					Performance (based on previous experience)				
		You may choose the no. that indicates the importance of the factor.					You may choose the no. that indicates the performance provided by the contractor.				
		Totally Not Important	Not Important	Average	Important	Totally Important	Very unsatisfied	unsatisfied	Average	satisfied	Very satisfied
C. Principal Measures											
Adherence to schedule (***time*** performance).											
1	Give small jobs high priority.	1	2	3	4	5	1	2	3	4	5
2	Plan and schedule jobs quickly.	1	2	3	4	5	1	2	3	4	5
3	Once a job is started it is completed quickly.	1	2	3	4	5	1	2	3	4	5
4	Responding immediately to work status inquiries.	1	2	3	4	5	1	2	3	4	5
5	Maintaining sense of urgency.	1	2	3	4	5	1	2	3	4	5
6	Providing notifications and explanations for work delays.	1	2	3	4	5	1	2	3	4	5
7	Finishing the project on time.	1	2	3	4	5	1	2	3	4	5
Adherence to budget (***cost*** performance).											
1	Conducting value engineering to reduce costs optimizing the available feasible alternatives.	1	2	3	4	5	1	2	3	4	5
2	Employing adequate cost control measures to stay within budget.	1	2	3	4	5	1	2	3	4	5
3	Reducing wastes to a minimum.	1	2	3	4	5	1	2	3	4	5
4	Having adequate financing arrangements.	1	2	3	4	5	1	2	3	4	5
5	Finishing project within budget.	1	2	3	4	5	1	2	3	4	5
Quality of construction and workmanship.											
1	Giving top priority to the performance (operational) characteristics of the facility.	1	2	3	4	5	1	2	3	4	5
2	Giving equal performance to the secondary characteristics of features of the facility.	1	2	3	4	5	1	2	3	4	5
3	Making efforts by the contractor to meet or exceed all specifications or conformance requirements. (Outstanding care about details)	1	2	3	4	5	1	2	3	4	5
4	Ensuring the durability of the completed facility as an integral part of contractor functions. (Innovation through new ideas or technologies)	1	2	3	4	5	1	2	3	4	5
5	Giving importance to aesthetics, such as how the output feels, sounds and looks.	1	2	3	4	5	1	2	3	4	5
6	Perceiving quality as an essential dimension of overall client satisfaction.	1	2	3	4	5	1	2	3	4	5
7	Applying quality assurance procedures.	1	2	3	4	5	1	2	3	4	5
Safety measures and standards.											
1	Personal protection equipment.	1	2	3	4	5	1	2	3	4	5
2	Availability of first aid supplies.	1	2	3	4	5	1	2	3	4	5
3	Availability of safety training for the job site personnel.	1	2	3	4	5	1	2	3	4	5
4	Regular meetings with the site personnel to insure safety awareness within the staff.	1	2	3	4	5	1	2	3	4	5
5	Commitment of the top management with the safety policies and regulations.	1	2	3	4	5	1	2	3	4	5
6	Accidents' investigation and documentation in the site.	1	2	3	4	5	1	2	3	4	5
7	Availability of safety director.	1	2	3	4	5	1	2	3	4	5
8	Availability of safety plan.	1	2	3	4	5	1	2	3	4	5
9	Compliance with local safety regulations.	1	2	3	4	5	1	2	3	4	5

No.	Factor	Importance (Ideal)					Performance (based on previous experience)				
		You may choose the no. that indicates the importance of the factor.					You may choose the no. that indicates the performance provided by the contractor.				
		Totally Not Important	Not Important	Average	Important	Totally Important	Very unsatisfied	unsatisfied	Average	satisfied	Very satisfied
D. Resources management											
1	Material management.	1	2	3	4	5	1	2	3	4	5
2	Manpower management (quantity and quality of craft operatives).	1	2	3	4	5	1	2	3	4	5
3	Equipment and plant management.	1	2	3	4	5	1	2	3	4	5
4	Management and co-ordination of subcontractors and suppliers.	1	2	3	4	5	1	2	3	4	5
5	Payment to subcontractors and suppliers (on time).	1	2	3	4	5	1	2	3	4	5
6	Strength of contractor site team (i.e. quantity).	1	2	3	4	5	1	2	3	4	5
7	Concern/awareness for environmental issues.	1	2	3	4	5	1	2	3	4	5
8	Maximum resources and financial capabilities.	1	2	3	4	5	1	2	3	4	5
9	Type of plant and equipment available and suitability of the equipment.	1	2	3	4	5	1	2	3	4	5
10	Contractor's familiarity with local suppliers, labors, etc.	1	2	3	4	5	1	2	3	4	5
E. Site personnel											
1	Co-operation with client (i.e. client representative).	1	2	3	4	5	1	2	3	4	5
2	Individuals' performance and abilities.	1	2	3	4	5	1	2	3	4	5
3	Project manager performance and adequacy of authority.	1	2	3	4	5	1	2	3	4	5
4	Site manner (i.e. no loud noises and swearing).	1	2	3	4	5	1	2	3	4	5
5	Availability of highly qualified technical staff in the contractor's firm.	1	2	3	4	5	1	2	3	4	5
6	Availability of highly qualified managerial staff in the contractor firm.	1	2	3	4	5	1	2	3	4	5
7	Skills of the contractor's work supervisors.	1	2	3	4	5	1	2	3	4	5
8	Skills of the contractor's workers.	1	2	3	4	5	1	2	3	4	5
9	Commitment of the contractor's employee to set goals.	1	2	3	4	5	1	2	3	4	5
10	Capacity of contractor's workers for cooperation.	1	2	3	4	5	1	2	3	4	5
11	Commitment of contractor's subcontractors.	1	2	3	4	5	1	2	3	4	5
F. Variations, drawings and handing over											
1	Agreement about changes and processing variations with speed and flexibility.	1	2	3	4	5	1	2	3	4	5
2	Processing variations (e.g. speed, flexibility).	1	2	3	4	5	1	2	3	4	5
3	Preparation of shop drawings and as-built drawings.	1	2	3	4	5	1	2	3	4	5
4	Contribution to development of design drawings.	1	2	3	4	5	1	2	3	4	5
5	Completion stage, finishing and ease of handing over and settlement of final account.	1	2	3	4	5	1	2	3	4	5
6	Completion of defects. (speed and quality)	1	2	3	4	5	1	2	3	4	5
7	Smoothness of operation and hand-over.	1	2	3	4	5	1	2	3	4	5
8	Quality of hand-over documentation (O&M manual, H&S).	1	2	3	4	5	1	2	3	4	5

No.	Factor	Importance (Ideal)					Performance (based on previous experience)				
		You may choose the no. that indicates the importance of the factor.					You may choose the no. that indicates the performance provided by the contractor.				
		Totally Not Important	Not Important	Average	Important	Totally Important	Very unsatisfied	unsatisfied	Average	satisfied	Very satisfied
G. Quality of service											
1	Handling of complaints (effectiveness).	1	2	3	4	5	1	2	3	4	5
2	Telephone inquiries and correspondence.	1	2	3	4	5	1	2	3	4	5
3	Speed and reliability of service.	1	2	3	4	5	1	2	3	4	5
4	Responsiveness to client.	1	2	3	4	5	1	2	3	4	5
5	Ability to make rapid decisions.	1	2	3	4	5	1	2	3	4	5
6	Commitment of key persons (active and continuous).	1	2	3	4	5	1	2	3	4	5
7	Corporate hospitality and generosity in dealing with the client and his representatives.	1	2	3	4	5	1	2	3	4	5
8	Administration.	1	2	3	4	5	1	2	3	4	5
9	Deep involvement in the problems and treating them as important request.	1	2	3	4	5	1	2	3	4	5
10	Providing assistance and direction for completing paperwork.	1	2	3	4	5	1	2	3	4	5
11	Repairing of defects and deficiencies noticed during handover inspection.	1	2	3	4	5	1	2	3	4	5
12	Information flow in the site.	1	2	3	4	5	1	2	3	4	5
13	Access of contractor's employee.	1	2	3	4	5	1	2	3	4	5
H. Attitude											
1	Honesty and integrity.	1	2	3	4	5	1	2	3	4	5
2	Collaborative/spirit of co-operation/teamwork.	1	2	3	4	5	1	2	3	4	5
3	Customer focus/proactive to understand client/architect.	1	2	3	4	5	1	2	3	4	5
4	Keep the client informed/sharing information with architect.	1	2	3	4	5	1	2	3	4	5
5	Communication (to coalition member and site personnel).	1	2	3	4	5	1	2	3	4	5
6	Proactive attitude towards problems.	1	2	3	4	5	1	2	3	4	5
7	Avoidance of claims (not claims consciousness).	1	2	3	4	5	1	2	3	4	5
8	Responsibility for their decision.	1	2	3	4	5	1	2	3	4	5
9	Display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives.	1	2	3	4	5	1	2	3	4	5
10	Simplifying procedures to either avoid or overcome complaints.	1	2	3	4	5	1	2	3	4	5
11	Offering personal attentions to complaints.	1	2	3	4	5	1	2	3	4	5
12	Offering reasonable explanation for complaints.	1	2	3	4	5	1	2	3	4	5
13	Treating complaints on completed jobs as priorities.	1	2	3	4	5	1	2	3	4	5
14	Responding quickly to legitimate complaints.	1	2	3	4	5	1	2	3	4	5
15	Working in harmony with consultant firm.	1	2	3	4	5	1	2	3	4	5

Third: - Client's and consultant's satisfaction and repetitive work with contractors:

10. "The local contractors care to achieve the client's and consultant's satisfaction through outstanding performance". What is your opinion ?

Totally disagree ☐ Disagree ☐ Neutral ☐ ☐ Agree Totally agree ☐

11. "The contractors' care to achieve the client's and consultant's satisfaction influence the performance level of the contractor". What is your opinion ?

Totally disagree ☐ Disagree ☐ Neutral ☐ ☐ Agree Totally agree ☐

12. "The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence their choice when the contractor is bidding or applying for new work". What is your opinion ?

Totally disagree ☐ Disagree ☐ Neutral ☐ ☐ Agree Totally agree ☐

13. "The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence the possibility of existence of long term cooperation and an opportunity for repetitive work with that client". What is your opinion ?

Totally disagree ☐ Disagree ☐ Neutral ☐ ☐ Agree Totally agree ☐

14. From your point of view – (In points if possible). What is required from the local contractors to reach outstanding performance, that satisfies both clients and consultants, and at the same time build better relations that may form the base for good competitive advantage leading to long term future partner ship ?

……

Annex (2): Questionnaire Validity

A. ***Pre-construction stage: (After Awarding)***

Table (1) clarifies the correlation coefficients between the items of the *Pre-construction stage: (After Awarding)* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section.

Table (1)
Correlation coefficients between satisfaction factors and their related section for the Pre-construction stage (After Awarding)

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	First interview and presentation of the implementation approach.	0.656	0.000	0.468	0.010
2	Ability and willingness to help develop the client brief of the project.	0.595	0.001	0.673	0.000
3	Contribution to design and buildability of project.	0.791	0.000	0.579	0.001
4	Plan of work and method statement.	0.495	0.006	0.756	0.000
5	Understanding of contract and specifications.	0.673	0.000	0.735	0.000
6	Completely explain administration policies, procedures and coordination requirements before commencement.	0.767	0.000	0.678	0.000
7	Providing a reasonable estimate of work and defining milestones, when requests for starting work are issued.	0.637	0.000	0.803	0.000
8	The price offered by the contractor's firm compared to the client's estimate).	0.496	0.007	0.770	0.000
9	Warranty conditions of the contractor firm offers.	0.607	0.000	0.461	0.010

B. Construction stage:

Table (2) clarifies the correlation coefficients between the items of the *Construction* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire for what is being measured.

Table (1)
Correlation coefficients between satisfaction factors and their related section for the construction stage.

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	Managing the site through top management level.	0.568	0.001	0.733	0.000
2	Site supervision and control through supporting personnel level.	0.620	0.000	0.710	0.000
3	Site organization, tidiness and cleanliness.	0.721	0.000	0.904	0.000
4	Ability to plan and programme properly.	0.712	0.000	0.829	0.000
5	Compliance to local national regulations and guidelines.	0.652	0.000	0.745	0.000
6	Providing updates on work as it progresses and providing periodic listing of all work orders and their status.	0.772	0.000	0.746	0.000
7	Explaining what was done to solve a particular problem.	0.539	0.003	0.649	0.000
8	Project control, monitoring process and cost control.	0.669	0.000	0.836	0.000
9	Proposed construction method.	0.618	0.000	0.765	0.000

C. Principal Measures

Table (3) clarifies the correlation coefficients between the items of the *Principal Measures* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire.

Table (3)
Correlation coefficients between satisfaction factors and their related section for the Principal measures

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
Adherence to schedule (*time* performance).					
1	Give small jobs high priority.	0.528	0.003	0.694	0.000
2	Plan and schedule jobs quickly.	0.560	0.002	0.858	0.000
3	Once a job is started it is completed quickly.	0.693	0.000	0.782	0.000
4	Responding immediately to work status inquiries.	0.883	0.000	0.451	0.014
5	Maintaining sense of urgency.	0.704	0.000	0.494	0.006
6	Providing notifications and explanations for work delays.	0.623	0.000	0.564	0.001
7	Finishing the project on time.	0.713	0.000	0.833	0.000
Adherence to budget (*cost* performance).					
1	Conducting value engineering to reduce costs optimizing the available feasible alternatives.	0.807	0.000	0.876	0.000
2	Employing adequate cost control measures to stay within budget.	0.771	0.000	0.902	0.000
3	Reducing wastes to a minimum.	0.760	0.000	0.771	0.000
4	Having adequate financing arrangements.	0.685	0.000	0.830	0.000
5	Finishing project within budget.	0.699	0.000	0.767	0.00
Quality of construction and workmanship.					
1	Giving top priority to the performance (operational) characteristics of the facility.	0.755	0.000	0.795	0.000
2	Giving equal performance to the secondary characteristics of features of the facility.	0.735	0.000	0.877	0.000
3	Making efforts by the contractor to meet or exceed all specifications or conformance requirements. (Outstanding care about details)	0.741	0.000	0.822	0.000
4	Ensuring the durability of the completed facility as an integral part of contractor functions. (Innovation through new ideas or technologies)	0.737	0.000	0.891	0.000
5	Giving importance to aesthetics, such as how the output feels, sounds and looks.	0.658	0.000	0.605	0.001
6	Perceiving quality as an essential dimension of overall client satisfaction.	0.403	0.030	0.716	0.000
7	Applying quality assurance procedures.	0.538	0.003	0.798	0.000

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
Safety measures and standards.					
1	Personal protection equipment.	0.635	0.000	0.659	0.000
2	Availability of first aid supplies.	0.624	0.000	0.847	0.000
3	Availability of safety training for the job site personnel.	0.787	0.000	0.899	0.000
4	Regular meetings with the site personnel to insure safety awareness within the staff.	0.689	0.000	0.932	0.000
5	Commitment of the top management with the safety policies and regulations.	0.912	0.000	0.840	0.000
6	Accidents' investigation and documentation in the site.	0.817	0.000	0.785	0.000
7	Availability of safety director.	0.690	0.000	0.883	0.000
8	Availability of safety plan.	0.792	0.000	0.924	0.000
9	Compliance with local safety regulations.	0.827	0.000	0.884	0.000

D. Resources management

Table (4) clarifies the correlation coefficients between the items of the *Resources management* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire.

Table (4)
Correlation coefficients between satisfaction factors and their related section for the Resources management.

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	Material management.	0.754	0.000	0.763	0.000
2	Manpower management (quantity and quality of craft operatives).	0.761	0.000	0.827	0.000
3	Equipment and plant management.	0.702	0.000	0.621	0.000
4	Management and co-ordination of subcontractors and suppliers.	0.684	0.000	0.793	0.000
5	Payment to subcontractors and suppliers (on time).	0.649	0.000	0.759	0.000
6	Strength of contractor site team (i.e. quantity).	0.483	0.008	0.869	0.000
7	Concern/awareness for environmental issues.	0.773	0.000	0.776	0.000
8	Maximum resources and financial capabilities.	0.598	0.001	0.630	0.000
9	Type of plant and equipment available and suitability of the equipment.	0.857	0.000	0.695	0.000
10	Contractor's familiarity with local suppliers, labors, etc.	0.725	0.000	0.369	0.049

E. Site personnel

Table (5) clarifies the correlation coefficients between the items of the *Site personnel* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire.

Table (5)

Correlation coefficients between satisfaction factors and their related section for the site personnel.

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	Co-operation with client (i.e. client representative).	0.527	0.003	0.658	0.000
2	Individuals' performance and abilities.	0.587	0.001	0.704	0.000
3	Project manager performance and adequacy of authority.	0.512	0.004	0.661	0.000
4	Site manner (i.e. no loud noises and swearing).	0.625	0.000	0.569	0.001
5	Availability of highly qualified technical staff in the contractor's firm.	0.716	0.000	0.806	0.000
6	Availability of highly qualified managerial staff in the contractor firm.	0.728	0.000	0.767	0.000
7	Skills of the contractor's work supervisors.	0.647	0.000	0.764	0.000
8	Skills of the contractor's workers.	0.629	0.000	0.638	0.000
9	Commitment of the contractor's employee to set goals.	0.601	0.001	0.789	0.000
10	Capacity of contractor's workers for cooperation.	0.774	0.000	0.678	0.000
11	Commitment of contractor's subcontractors.	0.774	0.000	0.700	0.000

F. Variations, drawings and handing over

Table (6) clarifies the correlation coefficients between the items of the *Variations, drawings and handing over* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire.

Table (6)

Correlation coefficients between satisfaction factors and their related section for the Variations, drawings and handing over.

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	Agreement about changes and processing variations with speed and flexibility.	0.823	0.000	0.814	0.000
2	Processing variations (e.g. speed, flexibility).	0.809	0.000	0.870	0.000
3	Preparation of shop drawings and as-built drawings.	0.795	0.000	0.667	0.000
4	Contribution to development of design drawings.	0.849	0.000	0.760	0.000
5	Completion stage, finishing and ease of handing over and settlement of final account.	0.734	0.000	0.849	0.000
6	Completion of defects. (speed and quality)	0.722	0.000	0.716	0.000
7	Smoothness of operation and hand-over.	0.740	0.000	0.713	0.000
8	Quality of hand-over documentation (O&M manual, H&S).	0.614	0.000	0.731	0.000

G. Quality of service

Table (7) clarifies the correlation coefficients between the items of the *Quality of service* and the average of the related section , coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire.

Table (7)

Correlation coefficients between satisfaction factors and their related section for the Quality of service.

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	Handling of complaints (effectiveness).	0.810	0.000	0.756	0.000
2	Telephone inquiries and correspondence.	0.620	0.000	0.712	0.000
3	Speed and reliability of service.	0.836	0.000	0.675	0.000
4	Responsiveness to client.	0.652	0.000	0.678	0.000
5	Ability to make rapid decisions.	0.714	0.000	0.674	0.000
6	Commitment of key persons (active and continuous).	0.782	0.000	0.715	0.000
7	Corporate hospitality and generosity in dealing with the client and his representatives.	0.682	0.000	0.747	0.000
8	Administration.	0.680	0.000	0.798	0.000
9	Deep involvement in the problems and treating them as important request.	0.606	0.000	0.654	0.000
10	Providing assistance and direction for completing paperwork.	0.718	0.000	0.595	0.001
11	Repairing of defects and deficiencies noticed during handover inspection.	0.659	0.000	0.803	0.000
12	Information flow in the site.	0.678	0.000	0.756	0.000
13	Access of contractor's employee.	0.419	0.024	0.563	0.002

H. Attitude

Table (8) clarifies the correlation coefficients between the items of the *Attitude of service* and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section.

Table (8)

Correlation coefficients between satisfaction factors and their related section for the attitude.

No.	Factor	Importance (Ideal)		Performance (based on previous experience)	
		Pearson coefficient	p- Value	Pearson coefficient	p- Value
1	Honesty and integrity.	0.646	0.000	0.859	0.000
2	Collaborative/spirit of co-operation/teamwork.	0.609	0.000	0.756	0.000
3	Customer focus/proactive to understand client/architect.	0.774	0.000	0.767	0.000
4	Keep the client informed/sharing information with architect.	0.792	0.000	0.868	0.000
5	Communication (to coalition member and site personnel).	0.712	0.000	0.678	0.000
6	Proactive attitude towards problems.	0.771	0.000	0.781	0.000
7	Avoidance of claims (not claims consciousness).	0.602	0.001	0.841	0.000
8	Responsibility for their decision.	0.690	0.000	0.730	0.000
9	Display a courteous, nice, friendly and helpful attitude in dealing with the client and his representatives.	0.805	0.000	0.748	0.000
10	Simplifying procedures to either avoid or overcome complaints.	0.733	0.000	0.748	0.000
11	Offering personal attentions to complaints.	0.672	0.000	0.812	0.000
12	Offering reasonable explanation for complaints.	0.857	0.000	0.818	0.000
13	Treating complaints on completed jobs as priorities.	0.731	0.000	0.755	0.000
14	Responding quickly to legitimate complaints.	0.806	0.000	0.831	0.000
15	Working in harmony with consultant firm.	0.499	0.006	0.762	0.000

I. Client's and consultant's satisfaction and repetitive work with contractors

Table (9) clarifies the correlation coefficients between the items of the Client's and consultant's satisfaction and repetitive work with contractors and the average of the related section, coefficients denoted significance at 0.05 level, which means a content validity of this section of the questionnaire.

Table (9)
Correlation coefficients between items and their related section
(Client's and consultant's satisfaction and repetitive work with contractor)

No.	Item	Pearson coefficient	p- Value
1	The local contractors care to achieve the client's and consultant's satisfaction through outstanding performance	0.538	0.003
2	The contractors' care to achieve the client's and consultant's satisfaction influence the performance level of the contractor	0.479	0.009
3	The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence their choice when the contractor is bidding or applying for new work	0.626	0.000
4	The level of satisfaction of the clients and consultants, regarding the contractor's performance in previous projects, influence the possibility of existence of long term cooperation and an opportunity for repetitive work with that client	0.643	0.000