

Introducing Partnering Type Construction Contract in Northern Cyprus

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ABSTRACT

The project owner and contractor are found to be two opposing parties due to the use of present contract types in Northern Cyprus. Lump-sum contracts and unit price contracts are two commonly used contract types which have been applied in construction project agreements for the past few decades. With the use of these contract types, relationships generally culminate as win-lose in which one party loses while the other wins. Win-lose situations mainly arise from the state of competition between parties. The project owner is seen in the lose position when the contractor does not fulfil the requirements as agreed upon. Conversely, the contractor is in a lose condition when the construction project is completed and delivered, however, does not receive the remaining payments from the project owner.

Nowadays, a lot of problems are experienced in the construction sector. As a result, the contractor and project owner is affected negatively. Problems with materials, financial issues, the inadequacy in construction quality, the delay of work in the construction process and the problems faced with sub-contractors are all main examples of negative consequences parties encounter.

As a prior study, civil engineers and experts were interviewed and conflicts were identified. A comprehensive questionnaire was developed based on the information collected from the interviews. The questionnaire was prepared according to contractors and project owners.

The problems were stated explicitly based on the responses given by both parties. Moreover, actions taken to solve the problems as well as suggestions to prevent

problems were specified. At the same time, perceptions of partnering type contract were ascertained.

Consequently, the problems in Northern Cyprus were determined hence partnering type contract is suggested as a solution to these problems. The reason for this contract type selection is because partnering type contracts tend to improve quality of construction, safety and time scales, increase profits for both parties and reduce costs which are all the currently experienced problems in Northern Cyprus. According to the obtained results, it is observed that contractors and project owners have a positive perspective towards partnering type contract and the results have also shown that partnering type contract could be implemented in place of traditional contracts to solve the problems among parties in Northern Cyprus.

Keywords: partnering type, contract, construction, problems, actions, suggestions questionnaire, Northern Cyprus

ÖZ

Kuzey Kıbrıs'ta kullanılan mevcut mukavele türlerinde proje sahibi ile müteahhit iki karşı taraf olarak bulunmaktadır. Uzun yıllardır inşaat proje antlaşmalarında kuzey Kıbrısta yaygın olarak kullanılan mukavele türleri toplu para ve birim fiyat mukaveleleridir. Buna ek olarak ikisi arasındaki ilişki kazan-kaybet olarak adlandırılmakta yani bir taraf kazanırken diğer taraf kaybetmektedir. Bu kazan-kaybet durumları çoğunlukla iki tarafın bir biri arasında rekabete girmesinden ortaya çıkmaktadır. Müteahhit sözleşmedeki görevlerini yerine getirmeyince proje sahibi kaybet pozisyonuna düşmektedir. Tam ters olarak, müteahhit projeyi tamamlamış ve proje sahibine teslim ettiği halde kalan parasını almamış ise kaybet pozisyonuna müteahhit düşmektedir.

Günümüzde inşaat sektöründe bir çok sorunlar yaşanmaktadır. Buda müteahhit ve proje sahibini negatif yönden etkilemektedir. Örneğin; kullanılan malzemelerde yaşanan sorunlar, parasal anlaşmazlıklar, inşaat kalitesindeki eksiklikler, inşaat sürecinde gecikmeler ve taşeronlar ile yaşanan çeşitli sorunlar.

Bu çalışma kapsamında bir ön çalışma olarak inşaat mühendisleri ve uzman kişiler ile görüşülmüş ve sektör de yaşanan sorunlar belirlenerek adlandırılmıştır. Bu sorunlara bağlı olarak detaylı bilgi içeren bir anket hazırlanarak hem müteahhitlere ve hemde çalışmış oldukları proje sahiplerine yöneltilmiştir.

Her iki tarafında vermiş olduğu yanıtlardan sorunlar detaylı olarak belirlenilmiş, bu sorunlar karşısında her iki tarafında tutumları ve bu konularda her hangi bir sorun

yaşanmaması için önerileri alınmıştır. Aynı zamanda partnering mukavelesi hakkında görüşleri alınmıştır.

Sonuç olarak kuzey kıbrıs ta bulunan problemler belirlenmiş bunun çözümü için partnering mukavelesi önerilmiştir. Bu partnering mukavele çeşidini seçme sebebi inşaat kalitesini, güvenliğini, zaman çizelgesini ve karı iki taraf için artıma eğilimli olması ve kuzey kıbrısta yaşanılmış olan problemler ile birebir eşleşmiş olmasıdır. Çıkan analiz sonuçlarında sektörde proje sahiplerinin ve müteahhitlerin partnering mukavelesine olumlu baktıklarını ve geleneksel mukavele türleri yerine partnering mukavelesi kullanarak sorunları çözebileceğini göstermiştir.

Anahtar kelimeler: partnering çeşidi ,mukavele , problemler, davranışlar, önerileri, anket, kuzey kıbrıs

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LIST OF ABBREVIATIONS

BOT	Build Operate Transfer
CII	Construction Industry Institute
CMR	Construction Management at Risk
COE	Council of Europe
DBB	Design Bid Build
DB	Design-Build
IPD	Integrated Project Delivery
NAVFAC	Naval Facilities Engineering Command
PPC	Project Partnering Contract
UK	United Kingdom
USA	United States of America

Chapter 1

INTRODUCTION

1.1 Background

The usage of construction contracts is considered highly important as it generates legality and formality among parties. In the case of Northern Cyprus, lump-sum contract type and unit price contract type are used between parties. These contract types give rise to opposition between parties, that is, forms a competitive condition between the owner and the contractor. Thus, this relationship can be referred to as win-lose. This situation arises from the disagreement in negotiation usually caused by one of the parties. Eventually, the bond between parties is harmed and loss of credibility is viewed (Round, K. and Emerick, D., 2000). In addition to this, the big rivalry during the negotiation period is liable to result in win-lose consequences (Kamin, 2010).

Taking win-lose situations into consideration, a number of problems have been detected in the construction sector. Among these problems are commonly materials, the quality of construction, financial issues, timing and subcontractors.

First of all, a highly important amount of money is spent on the materials used in construction. However, a lot of research has shown that extreme quantities have been wasted in the construction process due to reasons such as purchasing more than the

necessary amount of materials, causing harm to materials or losing them (CIRIA, 1999).

Another problem which is widespread in the construction sectors around the world is the quality of construction. In situations where the project owners are not gratified and the desired outcomes and specifications of the project are not achieved successfully, the quality of construction decreases. The poor quality in construction can also be related to the low quality of workmanship which occurs due to inexperienced or unqualified workers (Ali, A.S. and Wen, K.H., 2011). Furthermore, a study in Turkey (Kazaz and Birgönül, 2005) indicated that the quality of construction is a crucial issue as it is not at the desired level.

Financial issues are also encountered during the construction process. Among these problems are exceeding costs, alterations or the payments that are not made on time or are postponed by project owners, contractors or sub-contractors. In a study conducted by Leather and Rolfe (1997), the problem of late payments was examined and it was suggested that these issues could not be solved unless they were directed to the law.

Problems with timing in construction have also been experienced widely. Construction could be delayed if the project is not completed on the specified date in the contract. According to O'Brien (1976), delay can be defined as the time that exceeds the date of the contract or the date of the finalized project agreed by the contractor and project owners in advance. This may generally be a result of insufficient management and supervision, unanticipated problems on site or not giving timely decisions. Additionally, sub-contractors, which are another issue in the

construction sector, may also be the reasons of delay. In a study carried out by Bordoli and Baldwin (1998), it was found that one of the main causes of delay in project work in the USA was subcontractors.

In order to solve the stated problems, the implementation of a partnering method is recommended. The partnering method ensures a win-win situation for parties involved in the construction project. Specifically, common goals and objectives are established by parties in collaboration and are achieved in a cooperative manner. For the achievement of a win-win situation, it is essential that each party successfully fulfils set goals and objectives by devoting all that is demanded (Rojas, 2009).

Latham (1994) discusses the importance of using partnering to accomplish win-win cases between contractors and project owners. Egan (1998), who also supports this method, suggested that construction industries should benefit from other industries by applying the most efficient actions in their own situations.

This study aims to investigate the problems that occur in the construction sector in Northern Cyprus and to examine the applicability of a partnering method between contractors and project owners. A comprehensive questionnaire was carried out to determine solutions for the problems experienced in the sector. This questionnaire collected data about the mutual problems faced by contractors and project owners in the Northern Cyprus construction sector, the actions taken by parties to solve problems as well as the recommendations to avoid the problems from being experienced, and most importantly introduced partnering type contract to identify the degree it could solve problems. The results of the questionnaire showed whether partnering type contract is convenient in the Northern Cyprus construction sector.

1.2 Scope and Objectives

The purpose of this thesis is to highlight that the contract types used at present result in win-lose cases, therefore, the replacement of these contracts with partnering type contract will be beneficial for both parties as it transforms the win-lose situation into a win-win situation.

The primary objectives of this research are specified as follows:

1. To investigate the problems created in the Northern Cyprus construction industry due to the use of traditional contract types.
2. To determine various conflicts experienced in the Northern Cyprus construction industry.
3. To propose a new contract type and to mitigate the disadvantages of existing traditional contracts.
4. To evaluate the proposed partnering type contract method by using a structured open and closed ended questionnaire.

1.3 Works undertaken

The following works were carried out in order to achieve the objectives of this thesis:

- Carrying out an open-ended and closed-ended questionnaire to contractors and project owners in Northern Cyprus in a face-face interview setting.
- Conducting focus group meetings and interviews with civil engineers and experts.
- The enlightenment of literature review that traditional contracts are win-lose situations however, the implementation of the partnering method becomes a win-win situation, thus eliminating disadvantages.

- Analysing the data collected from the questionnaires to determine whether or not partnering type contract could be utilized in the Northern Cyprus construction industry.

1.4 Methodology

Methodology could be considered as a planned and orderly procedure used to solve problems in research. It is a guidance that shows how research could be performed. Collis & Hussey (2003) define methodology as a set of general approaches and outlooks which deals with why, what, where and how questions when collecting and analysing data. It is significant that researchers are erudite with the various types of research methods as well as the appropriateness, correct structure and outcome and effectiveness of the methodology. The process of methodology involves description, investigation, explanation, exploration as well as speculation. Two main approaches applied in methodology are qualitative and quantitative methods (Rajasekar et al., 2013).

Qualitative method: is a subjective approach that collects data of experiences, attitudes, values of social elements. Interpretation is based on the holistic view of the situations in a descriptive manner. Data collection is carried out in forms of interviews, observations and focus group meetings (Neville, 2007).

Quantitative method: is an objective approach that collects and analyses data in numerical terms. Unlike qualitative, it is non-descriptive and rather focuses on mathematical and statistical information, and a set of numbers presented in graphs, charts and tables (Neville, 2007).

This thesis has been conducted with a combination of qualitative and quantitative methods. Nowadays, almost all traditional contract types encounter and result in win-lose situations. When an old but formal concept called partnering is used in place of traditional contracts, problems become solved and the situation turns into win-win. In this thesis, a prior study was carried out to determine experienced conflicts by interviewing civil engineers and experts. Furthermore, the data collected was used to design the questionnaire which is comprised of open-ended and closed-ended questions. The questionnaire was carried out in a face-face interview form and the data collected was presented in tables and figures.

1.5 Achievements

The achievements of this thesis are stated below in the same alignment of the objectives and works undertaken.

- Existing problems were determined, the actions taken to solve these problems and the suggestions of contractors and project owners were stated.
- By identifying different conflicts, a questionnaire was prepared to collect accurate and precise data.
- A win-win method was proposed in place of a win-lose method.
- Considering the responses of 53 participants, the results showed that partnering type contract is a favoured method, which indicates its utility as it could solve the major problems experienced by both parties.

1.6 Guide to Thesis

This thesis consists of seven chapters. In chapter two, a literature survey is made on construction contracts. Various types of construction contracts are explained and construction documents which include Bill of Quantities, drawings, specifications and schedules are described.

The third chapter continues literature survey on construction delivery methods. The different types of delivery methods and the important factors in selecting construction delivery methods are clarified.

The fourth chapter demonstrates a literature survey on estimating and tendering which includes the estimating process, tendering steps and tendering types.

In the fifth chapter, a literature survey is carried out on the emergence of project partnering, the partner selection process, the concept of partnering, project partnering contract based on various resources as well as studies conducted on project partnering contract.

The sixth chapter describes the questionnaire survey used in this thesis, presents the analysis of the data collected from the questionnaire and displays a discussion of the results of the study.

The seventh chapter includes a conclusion which emphasizes important findings of this investigation as well as recommendations for future studies in this area.

Chapter 2

CONSTRUCTION CONTRACTS

2.1 Introduction

Modern contracts have been used for commercial environment which has encouraged the development of demands to grow in construction contracts for many years. Despite this, nearly all of the contracts' conditions include the nineteenth century documents which are used these days. Also, the majority of construction law is dependent upon in the courts (Thomas, 2001).

In this chapter, a literature review is made on construction contracts: contract documents which comprise of Bills of Quantities, drawings, specifications and schedules are clarified in detail. Furthermore, contract types which include Fixed Price Contracts and Cost plus Contracts are explained explicitly.

2.2 Definition of Construction Contract

According to O'Reilly (1996), the agreements signed on paper by contracting parties (generally between an owner and contractor) are called construction contracts. Therefore, this engages both sides in terms of relations and responsibilities. Choosing the most appropriate kind of contract which will motivate the contractor to the desirable outcome allows the owner to accomplish a goal successfully in any particular task.

As a legal definition, a contract is an oath which is made obligatory by the law. In a common construction contract, minimum two reciprocal commitments are made. As stated in the contract, the contractor undertakes the job and the owner promises to pay for the work in return. In addition to this, there are normally further commitments in the contract relevant to the parties' requirements. A contract should be comprised of the following five elements (Kelley, 2012):

- i. The work scope
- ii. The work quality
- iii. The schedule of Project
- iv. The budget of Project
- v. The claims and amendments of parties in case one of the parties violate its responsibilities.

2.3 Contract Documents

Civil engineering tasks are generally intricate. For instance, the contractor takes part in a lot of different processes with many various materials and fabricated components and also has the responsibility of recruiting many types of experts; thereby the documents describe contracts as being complicated and extensive.

The documents which must be included in a construction contract are given below (Çelik , 2013):

- i. An agreement (contract) signed by parties (comprising of major terms)
- ii. A documentation which consists of:
 - Drawings
 - Specifications
 - Bill of Quantities

- Schedules

2.3.1 Drawings Document

To compose construction documents, an owner/employer or designer is needed to begin. Before the owners start the new construction project, an architect is assigned for the design. Drawings include physical and visual explanation of the related project which are called plans and blueprints in the construction industry (Çelik, 2013).

2.3.2 Specifications Document

Specifications are not only restricted to technical parts in contracts. All the things that are included in a specifications document are known as “the specifications”. Announced invitations for the bidding, agreed contracts, bid bonds, terms of the contract, performance bonds and payment bonds, technical terms of contract , project scheduling terms of contract and non-collusion affidavits are contained in the specifications (Hutchings, 2003).

2.3.3 Bills of Quantities Documents

The Bills of Quantities are the whole amount of work performed in the calculation stage which is estimated according to specified drawings and specifications. All the estimated components in the Bills of Quantities are the summarized form of the drawings and specifications. The contractor understands the requirements by looking at the specifications and drawings stated in the outline.

There are no extra calculated components to evaluate different information. Furthermore, some requirements are not quantifiable regarding the amount of labour and materials such as specialist supervision and maintenance. Additionally, they are not written in the bill documents as certain components and are involved in the prices

of the measured components. Estimated components and units of measurement in the Bills of Quantities form the technique of calculation for the contract. Any other calculation methods are not used to evaluate the fulfilled works. (WCA, 2010).

Apart from visuals, written specifications help shorten long definitions including perplexing information. The kind of requirements of products and materials are briefly described in specifications to provide that everyone is understood the products needed. Information of specifications is prepared in an order by giving title and number to each product (Betts, 2000).

2.3.4 Schedules

Contractual network diagram of organized actions involved in the project, the order of actions determined according to the logic of duties, the completion of the work enforced in contract timing process, and the specifications needed to complete them constitute a project schedule. Moreover, a project schedule takes place as a document in contracts which bind the customer, main contractor, sub-contractor and planner with each other. It is presented in the specifications section of a contract to guide the customer and designer in any unsuccessful situation of the production of activities, and it gives tactics to the main contractor and activities sub-contractors of the work they have to complete inside the time periods of their contract (Hutchings, 2003).

2.4 Types of Construction Contracts

There are different types of contracts which are used in construction industry. These contracts are divided into two parts according to their pricing methods (Miramontes et al., 2004):

Fixed Price Contracts

- i. Lump Sum Contracts
- ii. Unit Price Contracts

Cost plus Contracts (Cost Reimbursement Contracts)

- i. Cost + Fixed Percentage Contract
- ii. Cost + Fixed Fee with Guaranteed Maximum Price Contract
- iii. Cost + Fixed Fee with Bonus Contract

2.4.1 Fixed Price Contracts

Fixed-price contracts involve the determination of fixed prices by the contractor which is offered to the customer. There are two different types of fixed price contracts; Lump Sum contracts and Unit Price contracts.

2.4.1.1 Lump-Sum Contract

The lump sum contract, also known as “fixed price contract” or “drawings and specifications contract”, is perhaps the most common and simplest type of contract used in the construction industry. In this contract, it is important that the contractor creates the project which is planned for a certain amount. In this type of contract, the contractor who becomes in charge of all the risks may demand a higher mark-up, which is the total amount of profit, risks and overheads, in order to deal with unexpected incidents. If the contractor makes inaccurate estimates on the actual price of the project, the profit of the contractor will be either increased or decreased by the amount of the estimated cost (Hinze, 1993).

Like several other contract types, the lump sum contract has both benefits and drawbacks. Below, the most common advantages and disadvantages are listed (Sahoo, 2013 & Kubba, 2012).

2.4.1.1.1 Advantages of Lump-sum Contract

- The completion of this contract is generally achieved through high construction effectivity.
- The specifications of the project description provide the owner a desired end
- Choosing a contractor is simple.
- This type of contract has a low level of financial risk for the owner.
- Excellent performance raises the profit of the contractor.

2.4.1.1.2 Disadvantages of Lump-sum Contract

- The owner needs a lot of time to check the contract and offer attentively
- The contractor is at high risk in terms of monetary aspects.
- It provides more amount of time for the bidding and award process.
- The cost offered by the contractor is excessive
- The project cannot start until the design is completely finished before the bidding stage.
- Time can be wasted by additional designed plans and specifications

2.4.1.2 Unit Price Contracts

The unit price contract has the purpose of determining a stable price for each unit of work which is divided into different components. Throughout the contract validity period, the contractor is paid according to the requirements made in advance, that is, the real amount of work which is completed with the measurements and multiplications of the set per-unit cost. There is a possibility that estimates made at

the beginning of the project could change afterwards. As a result, the final cost of the project is tentative due to the amount of material used.

Unit price contracts are preferably used for agreements with subcontractors, and for repair and maintenance rather than a huge construction project. In addition to this, these contracts are appropriate for projects in which the amounts of materials are not stated properly because the measurements are difficult to estimate beforehand (Halpin, 2010).

According to Çelik (2013), there are common type advantages and disadvantages of the unit price contract.

2.4.1.2.1 Advantages of Unit Price Contracts

- Finalizing a great deal of the work is adequate, there is no need for the full description of the design
- Even if the amounts are not defined completely, construction can still begin.
- There is an opportunity to begin the project at an earlier stage
- It's convenient for competitive, simple and cheap bidding
- Common drawings are sufficient for the bidding stage
- The owner can change contract documents simply
- It has a low risk for the contractor
- It's simple for choosing a contractor

2.4.1.2.2 Disadvantages of Unit Price Contracts

- The project owner has risks on the entire amount
- The unit prices can rise or fall due to changes in large amounts
- The contractor has risks on the fixed unit price

- Unstable bidding can be achieved easily in unit price contracts
- The project owner has risks on the entire amount
- All parts of the staff must be evaluated, checked and reported on every completed unit.
- Making large amount of estimate errors can lead to more payment by the project owner or an additional contract.

2.4.2 Cost plus Contracts (Cost Reimbursement Contracts)

In this type of contract, the contractor is paid for the permitted expenditures which have a fixed limit as well as an extra payment for a profit (Maurer et al., 2011). A range of reimbursements may be demanded therefore an agreement needs to be made on its validity by the parties. Moreover, the calculation of the sum of cost, which comprises of mandatory payments and an agreed fixed limit that the contractor cannot go beyond, should be stated clearly in these contracts (Vallabhaneni, 2008).

2.4.2.1 Cost + Fixed Percentage Contract

The percentage of the cost determines the compensation. If the latest technological developments and urgent necessities are used in construction, the owner may be obliged to consider all risks of exceeding costs. The contractor will be paid for the actual work done including a fixed percentage, thus have less encouragement to decrease the price of work. Moreover, additional costs may be necessary for the urgent completion of the project which requires employees to work overtime (Hendrickson et al., 1989).

2.4.2.2 Cost + Fixed Fee with Guaranteed Maximum Price Contract

This type of contract is commonly used and is especially appropriate for turnkey operation. The fixed total amount of money determines the compensation. If there is a limit negotiated in advance, the total cost of the project shouldn't pass that limit.

An owner has the option of allowing the contractor to take all the risks if the scope of the project is described precisely and accurately. The owner is given the performance conditions at the initial stage of construction; therefore if there are any work change orders, the number of them must be kept to the absolute minimum. Furthermore, the contractor assures the cost of a project which is agreed by the parties (Çelik, 2013).

2.4.2.3 Cost + Fixed Fee with Bonus Contract

The fixed total amount of money determines the compensation. If the project ends with a lower budget earlier than planned or because of other reasons, then a bonus is provided. Since the fee of the contractor is fixed, the contractor does not feel encouraged to decrease costs (Hendrickson et al., 1989).

2.5 Procurement Methods in Construction Industry

In order to make purchases, a company carries out a series of actions which are known as procurement methods. Three commonly applied procurement methods are; direct purchase or acquisition, negotiations, and competitive bidding (Vitez, 2014);

2.5.1 Direct Purchase or Acquisition Procurement Method

In this type of procurement method, purchase orders are prepared and offered to a contractor. This method is regularly carried out by majority of the companies in order to have a good command of costs and ensure warrant for purchased orders.

2.5.2 Negotiation Procurement Method

This kind of method is preferably used for purchases that are worth large amounts such as vehicles, land property or constructions. In order to reduce the cost of assets to the minimum amount, negotiation is demanded by companies.

2.5.3 Competitive Bidding

Competitive bidding is a process that generally involves particular industries or huge agreements between multiple companies. This kind of bidding could be silent or

open. Silent bidding involves a written bid chosen by companies whereas open bidding enables discussion between companies.

Chapter 3

CONSTRUCTION DELIVERY METHODS

3.1 Introduction

All owners have to select a construction delivery method carefully which will be used in the designing and constructing stage of the project. In the past few years, choosing a construction delivery method has started to become troublesome, thereby new methods have been created to solve problems in the traditional design-bid-build plan. Some of the well-known methods are construction management at-risk, Integrated Project Delivery, design-build and multiple prime contracting methods. Supporters of other specific methods make a commitment to develop certain conventional areas such as components of Project Schedule, the number of disagreements and controlling cost.

These increased number of delivery methods give a wide selection of opportunities to the owner/builder when selecting a suitable and powerful system for the specific project. Construction management is formed strictly for the design, planning and construction duration of the big projects. The efficiency of the construction management has been verified in selected project delivery methods (CMAA, 2012).

In this chapter, a literature review is made on the crucial factors in the selection of construction delivery methods and types of delivery methods.

3.2 Factors Needed to Be Considered While Choosing a Delivery Method

- i. Level of design
- ii. Cost /budget
- iii. Schedule
- iv. Experiences of the owner
- v. Risk allocation (Molenaar et al., 2012)

3.2.1 Level of Design

For successful outcomes of the project, the owner should select eligible individuals for the design team. The program requirements need to be clarified to the design team. Moreover, the design of the work must be convenient for construction and the purpose should be stated clearly. In this case, the owner can demand that the official paper for design is in a buildable, exact, explicit and well organized layout. As well as this, supervision of the components of the projects depends on the owners.

3.2.2 Cost

It is essential that the budget is estimated before the design for the measurement of the project applicability, securing of financing and calculation of the risk. When the budget is estimated, the owner demands that the completion of the project is close to the defined budget line. The owner is responsible for finding the final costs of the specified project and evaluating the degree of risk which goes beyond the cost.

3.2.3 Schedule

As it is in the designing stage, the same requirements are also demanded in scheduling. An exact evaluation of the project duration and alignment are required to be applied at the beginning of the planning stage. After that, the schedule becomes observed and updated according to the design, extra phases and construction in order to reach an outcome successfully.

3.2.4 Owner's Experience (staff experience)

The experience of the owner in the management and construction duration is the most effective point in making a decision on the degree of external support needed throughout the procedure. Thus, it may lead the owner to decide on the reasonable project delivery method.

3.2.5 Risk Allocation

Risks of design and duration of construction are usually not related with the selected delivery method. On the other hand, the scheduling and sharing of the risk makes some changes according to selected delivery method. Thereby, all delivery methods have a varied approach system for dividing the risks which brings about time differences in conveying the assorted risks (GSFIC, 2003). The size of risks which are evaluated by the design parties must be equal with the cost related to the project.

3.3 Types of Construction delivery methods

The most common type project delivery methods in the construction industry are:

- i. Design Bid Build (Traditional Method)
- ii. Construction Management at Risk
- iii. Build-Operate-Transfer Method
- iv. Design Build
- v. Integrated project delivery

3.3.1 Design Bid Build (DBB) (Traditional Method)

Design bid build is commonly known as a traditional approach. Construction firms use agencies to develop plans and specifications which become included into the bid packet. Contractors use these plans and specifications for bidding. After the bids are examined and assessed, the contract is given to the bidder who has the least number of duties.

According to Bearup, Kenig, and O'Donnell (2007), the following characteristics define the design bid build method:

- i. All plans and specifications are 100% finalized.
- ii. The lowest bid is considered while choosing a contractor.
- iii. Different contracts are used for design and construction.

3.3.1.1 Risk Evaluation In Selecting The design Bid Build Method

The design bid build method serves the purpose of giving accurate and credible information about the costs prior to the construction stage. The owner is able to coordinate most of the design in the bid build method with respect to other project delivery methods. On the other hand, it may take time to implement this method so the initiation of construction may need to be postponed until the design and tender stages are completed (CMAA, 2012).

Below is a list of some typical advantages and disadvantages of the design bid build method (TCS, 2007):

3.3.1.2 Advantages of Design Bid Build Method

- i. Duties are well specified for the parties.
- ii. It is a well formed and comprehensible method.
- iii. It can be carried out in an extensive field of projects.
- iv. Insurance and assurance are described clearly
- v. There are no legal obstacles in licensing and tendering.
- vi. Claim competitive bidding which result with lowest price.
- vii. It gives the minimum beginning price offered by sensible and competing bidders.

3.3.1.3 Disadvantages of Design Bid Build Method

- i. Designers may not have sufficient information about the accurate costs and consequences of made agreements.
- ii. The agency tolerates sufficiency risk of the design
- iii. The first minimum bid may not end with the final lowest value.

3.3.2 Construction Management at Risk (CMR) Project Delivery Method

In this method, low bidding is not important because the owner chooses a contractor according to evaluations and references. The firm presents the owner a Guaranteed Maximum Price and keeps the whole trade contracts together. This method does not go beyond the total cost of the project, except design wages, and it also involves construction management controlling costs, profit, unexpected situations and all commercial costs and subcontractor costs (Newwa, 2009).

There are some characteristics for Construction Management at Risk which is described by AGC (2004) below:

- i. The Construction Manager at Risk is not only selected depending on the lowest cost. It is also selected according to qualifications and previous performances.
- ii. The owner signs different contracts with the designer and CMR.

There are advantages and disadvantages according to TCS, (2007):

3.3.2.1 Advantages of Construction Management at Risk

- i. It resolves project cost and the responsibility to complete it faster than the design bid build method.

- ii. Construction manager keeps contracts, and conveys performance risk to the general contractor.
- iii. The general contractor spends more money for cost and buildability than the construction manager of the agency.
- iv. This method is open to improvement and buildability suggestions in the design stage; also the agency is still in control of the design.
- v. This method decreases general management and supervision responsibilities of construction agency.

3.3.2.2 Disadvantages of Construction Management at Risk

- i. The information of the construction manager may not be incorporated by the designer.
- ii. The agency has a design responsibility.

3.3.3 Build Operate Transfer Method

The Build Operate Transfer method is a significant approach system for the construction of an infrastructure project which is generally undertaken by the government. According to this method, a concession is given to the private sector in order to develop and manage the project. Therefore, the private organizations finance, design, build and manage the project with an effective cost in the specified time period. After the concession duration is completed, the facility is transferred to the government (Handley, 1997).

The typical advantages and disadvantages of BOT method (Mubarak ,2003):

3.3.3.1 Advantages of Build operate Transfer method

- i. Private firms are open to development when choosing the design and managing stages of a project.
- ii. Working with private firms is effective thus the project may be cheaper

3.3.3.2 Disadvantages of Build operate Transfer method

- i. The successful completion of the project is based on the amount of money collected for the project.
- ii. The operation costs are high, which is estimated between 5% and 10% of the total cost.

3.3.4 Design-Build Method (DB)

According to the design build method, the owner rents a company to undertake the design and construction process for the specified project. Furthermore, this company can assign consultants and subcontractors for the execution of designing and constructing. Some of the most important advantages of design build method are its responsibility for designing and constructing, quicker delivery and the combination of design and construction (El-Sayegh, 2007).

According to Bearup et al., (2007), there are some characteristics which describe Design Build method:

- i. Preconstruction services are installed throughout the project design duration by the design-builder.
- ii. It has only one responsibility
- iii. The design-builder is expected to offer a stable price and undertake the responsibilities of the delivery schedule.

- iv. A schedule that permits design and construction to take place at the same time.

3.3.4.1 Potential Risk in Selecting the DB Method

Project risk evaluation is the essential case when selecting a project in Design Build method. An agency must pay attention to the risk factors when choosing a project for Design Build such as the responsibilities towards design, the modifications in contracts, the disagreements of labours, the weather status, the rate of inflation and risk allocation (CASE, 2009).

There are some advantages and disadvantages of design build method (CASE, 2009):

3.3.4.2 Advantages of Design Build method

- i. It's open to creative designs.
- ii. The project duration is less.
- iii. The agency is not associated with disagreements of contractor and designer.
- iv. The price is definite.

3.3.4.3 Disadvantages of Design Build method

- i. The contractors have to pay more money to arrange a bid.
- ii. If specifications are not used, then the agency is restricted to control quality.
- iii. Giving contracts in a subjective manner.

3.3.5 Integrated project delivery (IPD) method

This method is recognized by a contractual arrangement with at least an owner, constructor and competent designer involved. It balances work benefits of whole parties. Integrated project delivery method motivates cooperation during the construction and design process and binds parties for project achievement. (AIA, 2012).

Common characteristics for the Integrated Project Deliver method are as listed (AIA, 2012):

- i. The whole team works on scheduling and project planning in a cooperative manner.
- ii. In this method, the risk and awards are distributed
- iii. After the beginning of the project, several decisions can be made concerned with the construction.
- iv. It constantly fulfils construction and design.
- v. There are at least three main important individuals exist; the owner, architect and contractor.

Integrated project delivery method has its advantages and disadvantages as follows (CMAA, 2012):

3.3.5.1 Advantages of Integrated Project Delivery

- i. The whole team's needs and wants are adjusted to the project objective in order to attain high achievement.
- ii. The owner obtains the same benefits in Design Build or Construction Management at Risk method.

3.3.5.2 Disadvantages of Integrated Project Delivery

- i. The original agreement for the criteria and integrated project delivery contract can be hard and can be a waste of time and effort. In this case, it is possible that the owner pays money or even time.

3.3.6 Alternative Project Delivery

Alternative Project Delivery Approaches are new in the construction industry, therefore, are not commonly implemented. It aims to achieve project goals with

reduce project cost in a shorter period of time. Variations of APD methods are as follows (Loulakis, 1999):

3.3.6.1 Design-Build Warranty

The contractor undertakes the design and construction of a project by issuing guarantee to fulfil stated items in the project within the specified time interval.

3.3.6.2 Design-Build-Operate-Maintain (DBOM)

The contract party undertakes the design, construction, operation and maintenance of a project within the specified time interval. It is a developed method of design-build which is aimed to improve the quality of the project.

3.3.6.3 Design-Build-Finance-Operate (DBFO)

This method is the continuation of the Design-Build-Operate-Maintain in which the contract parties undertake the financial costs of a project throughout the contract period.

3.3.7 Innovative Contracting Approaches

Innovative contracting approach is a definite procedure that aims to achieve certain objectives or works of a project. These kinds of approaches have succeeded in decreasing the time period of construction with proper time management. Bid Averaging Method (BAM), Business Development Initiative (BDI), and Design-Build Minor contracts are all related to innovative contracting approaches (Frantrasad, 2013):

3.3.7.1 Bid Averaging Method (BAM)

According to this method, the contractor does not bid the least among bidders but rather bids for an accurate and plausible project cost which is the original cost of the project.

3.3.7.2 Business Development Initiative

This method aims to strengthen small businesses by offering a higher number of opportunities and reinforcement. In order to fulfil contract needs, BDI tends to increase competitions, reduces costs and provide further support.

3.3.8 Partnering As Project Delivery Method

Construction is a very competitive, high-risk business. In many circumstances, because of the limitations of traditional project delivery systems, the competitiveness and the perception of risks can make the relationship between participants adversarial. The project's owner developed and implemented a project delivery approach that combines construction management and design-build with partnering, concurrent construction to deliver the project on time and within the budget (Ribeiro, 1998). Existing studies as stated by Tang et al, (2006) tends to agree that the adversarial situations significantly affect the productivity and efficiency of the construction industry. Tang et al, (2006) still stated that in the late 1980s, partnering emerged as a new project delivery method which seeks to create a win/win attitude among all construction parties to change the adversarial situation.

Chapter 4

ESTIMATING AND TENDERING

4.1 Introduction

The calculation of the costs of any specified project is known as Construction Estimating. Almost all studies and projects financed in the field of Civil Works Program need cost estimating. In this situation, the cost calculation is used as a necessary element which fulfils the duties of achieving management goals, economic analysis and budgets related delivery. Most of the parts in estimating, benefit and affect the project cost, therefore, all parts are examined, measured and priced one by one (Dagostino et al., 2011).

Tendering is the final price or in other words, it is known as the offer which is given to the project owner by the contractor. The offer includes the sum of money for the completion of the entire work and the margin for profit and over heads.

In this chapter, the estimating process is clearly stated at the beginning. In addition to this, the tendering steps are defined and each type of tendering method is described.

4.2 Estimating Process

According to Hanna et al., (2007) nowadays, old bid documents are used in regions while determining estimates. The usage of a cost based method can give more certain estimates, however changing the estimating style from historical bid tabs to the cost based estimating can be more costly and a waste of time for the application. In the continuation of estimating, instead of creating a central estimating unit, the usage of historical bid tabs is suggested.

According to Çelik, (2013) the main steps to be followed while estimating is:

- i. Making decision for the tender
- ii. Scheduling of the Estimate
- iii. Study on project
- iv. Preparation of the estimate
- v. Determination of site overheads
- vi. Submission of estimator's report

4.2.1 Making Decision for the Tender

Initially, the tendering procedure begins by making the decision to tender. The following criteria should be considered when selecting a contractor in the tender stage (Brook, 2012):

- i. The skills and knowledge appropriate to the kind of project.
- ii. A financial resource strength and good work history.
- iii. Prestigious with high quality work skills and effective management skills.
- iv. The ability to understand and fulfil any kind of work requirements.
- v. The capability to finish the project punctually.

4.2.2 Scheduling of the Estimate

In this stage, the scheduling of the estimate is made and a programme is formed which is important for offering the tender on time.

4.2.3 Collection and Computation of Cost Data

Information on the cost of labour, materials and plants, and subcontractors are clearly described as follows:

4.2.3.1 Pricing the Material and Plant

Transportation costs are contained in the material cost. Furthermore, material and plant costs should be excluded and differentiated from the contractor's own materials. After the calculation of how much material will be used, the price of each item is given. There are some pricing types used in the construction industry such as taking quotations from the other dealer, using updated price sheets, using estimating manuals and using old data (DOT, 2013).

Using the utmost up-to-date material prices is recommended. However, prices constantly change day by day; therefore, an increase needs to be made to the previous price in order to obtain current prices.

4.2.3.2 Subcontractors

In the subcontractor costing stage, the estimator organizes the materials and tasks based on the subcontractor's questions which need to be given to the estimator in a short period of time. After bids are taken, the bids are compared to each other and the most appropriate subcontractor is accepted. The subcontractor of the contractor is provided the profit and the chosen subcontractors can take part in estimating or they can just attend the tender meeting (Harris et al., 2013).

4.2.3.3 Cost of Labour

All salaries are calculated and given to workers according to the multiplication of the determined working hours with the labour base ratio as well as all payslip statutory costs which include national holidays, overtime and holiday leaves. Normally, this is the total amount used as the direct labour cost (DOT, 2013).

4.2.4 Study on Project

For the successful achievement of the project, the estimator works on drawings, visits construction sites and forms a method for constructing.

4.2.4.1 Visit of Construction Site

Estimators and planners meet with the project owner to investigate the construction area and respond to and clarify project owner's questions. However, meetings at sites are rarely organized in construction work.

4.2.4.2 Study on Drawings

Generally, the drawings are given to all contractors which take part in tendering. On the other hand, the estimator may have to meet with the architect in order to revise the drawings and solve any issues (Çelik, 2013).

4.2.5 Preparation of the Estimate

The preparation of an estimate can be done by following a number of stages: forming a quantity survey for the project, evaluating the general conditions costs, pricing each component of work separately, calculating the overhead and profit for markups, considering market situations and evaluating the increasing rates for labour, material and project risks costs (Dell'Isola, 2003).

4.2.6 Determination of Site Overheads

There are a lot of site overheads in the construction industry such as forming a site staff, clearing the site, providing accommodation, temporary services and transportation for workers, and considering anticipated risks etc. Moreover, the number of site overheads depends on the construction site needs. The site overhead costs are generally distributed to the first part of the bill (Smith, 1995).

4.2.7 Submission of Estimator's Report

Estimator's report should comprise of the following (Çelik, 2013):

- i. The evaluation of the project's profit.
- ii. A short, clear definition of the project.
- iii. The potential results related to financing.
- iv. The notes related to industrial and market situations.
- v. An overview of the construction method.
- vi. The information about important suppositions recorded in the preparation of estimates.
- vii. An explanation of an extraordinary risk which is not stated in bill of quantities.
- viii. The issues that can arise from the contract.

4.3 Calculation of Direct costs and Indirect costs for Tendering

In the initial stage of tendering, direct costs and indirect costs of projects are calculated.

4.3.1 Direct Costs

Direct costs are generally comprised of materials, labour, subcontractor (if used) and a plant which are estimated by estimators only. The name of a work part does not state exactly what the rate consists of. In tendering conditions, the percentage of

contractor's indirect and profit costs can or cannot be indicated in the work items by the contractor. Furthermore, historical cost data could possibly include particular payments for unexpected conditions in a project (NZTA, 2010).

4.3.2 Indirect Costs (overheads)

Indirect costs consist of the fixed costs which are related with constructing the site such as preparing site accommodation and other facilities. It also includes time related costs which are about operating the site until the completion of the project such as managing the site and quality controlling. In addition to this, costs of insurances and bonds are included inside indirect costs.

As mentioned earlier, in tendering conditions, the percentages of indirect costs could or could not be contained in the work items (NZTA, 2010).

4.4 Adjustments of Tendering

The leaders of senior management and the estimating team will take part in the staff committees or the tender adjustment forum. Furthermore, this forum is required to check whether or not the estimate is sufficient. This is done by analyzing the estimator's reports and by questioning the estimator on suppositions and choices. Generally, the combination of risks, overheads and profits are known as mark-up. It removes risks if there is a possibility to lose money. The project and company overheads are involved in the management of the contract. Moreover, profits are taken into account according to the current market (Çelik, 2013).

4.5 Submission of Tender

The estimator can submit tender contract documents with or without priced bill of quantities.

4.5.1 Submitting the Tender with Priced Bill of Quantities

When submitting bill of quantities, the direct cost ratios are determined for each item which is necessary to correct and make considerations for mark up. There are some methods for allocating mark-up such as increasing the percentages of every item which is estimated to undertake profit and overheads, and also containing mark-up additions as total payments in the beginning part of the bill (Çelik, 2013).

4.5.2 Submitting the Tender without Bill of Quantities

On occasions when giving in the tender form is necessary, the contractor should just submit the necessary general sums.

4.6 Types of tendering

There are three typical types of tendering methods used in the construction industry:

- i. Open tendering
- ii. Negotiated tendering
- iii. Selective tendering (Prequalified Tendering)

4.6.1 Open Tendering

Open tendering refers to the situation where any willing contractor can join and submit their tenders. Furthermore, it gives new contractors a chance to rival for their contract (Ogunsemi et al., 2006). During the period, a project owner is able to advertise publicly by sharing some information about the job. On one hand, this method is beneficial because when a larger number of tenders are collected, it leads to more competition. On the other hand, tenders could be possibly taken from contractors who lack in financial or technical performance of the work (Çelik, 2013).

4.6.2 Negotiated Tendering

In negotiated tendering, the owner asks selected contractors for advice and also discusses the contract terms with contractors. Usually, this type of tendering is used in conditions such as when the technical and financial properties of the contract are difficult to understand, if the project must be completed in a short period (emergency conditions) and also if the project is significant for the public (Mohemad et al., 2010).

The documents that must be given in by bidders are (Harris, 2013):

- i. Bonds
- ii. Authorization
- iii. A registration paper
- iv. Valid license of contractor ship
- v. The approval to participate in biddings
- vi. A document showing evidence that the company is currently running

Two common kinds of Bonds are:

- i. Performance bonds
- ii. Bid bonds

4.6.2.1 Performance Bonds

In this case, the contractor fulfils the contract's requirements which are guaranteed by a performance bond. However, if the contractor cannot meet the contract requirements or if any damage occurs, the project must be revised and fixed according to obligations within the contract without demanding any financial help from the project owner (Stockenstrom, 2007).

4.6.2.2 Bid Bonds

A guarantee given to a project owner by the contractor is known as a 'bid bond'. In this situation, the bidding contractor is rewarded a contract which is signed and carry out the work as agreed upon (Stockenstrom, 2007). Bid bonds generally comprise of 5 % of tender, and if the company is not selected, the bid bond is paid back. On the other hand, if the company rejects to do the work despite being selected, the bid bonds are lost and an additional cost is paid (Çelik, 2013). Types of Bidding:

- i. Open Bidding
- ii. Closed bidding (sealed-bid)

4.6.2.2.1 Open Bidding

It is also known as competitive bidding. In this condition, a single envelope consisting of the offered price as well as all of the information is submitted to the project owner. This type bidding is not suitable for big jobs (Çelik, 2013).

4.6.2.2.2 Closed Bidding (sealed-bid)

Closed bidding is also known as sealed-bid. Two envelopes are used in closed bidding; one of the envelopes contains details about the company address, name etc. and the second envelope, which involves the offered price, cannot be opened if there is any incomplete information (Çelik, 2013).

Closed bidding includes a five stage process (Silva, 2013):

- Firstly, the invitations are prepared for bidders by the company
- Secondly, the invitations are publicized for bidders
- Then, bids are proposed by bidders
- Next, bids are assessed by the company
- Finally, the contract is given to winning contractor

4.6.3 Selective Tendering (Prequalified Tendering)

In this tendering case, there are chosen contractors who are the only ones given permission to bid. This method reduces the competitiveness in the environment of contractors. Generally, selective tendering is used when certain expert skills and the most advanced technology is necessary in the contract, therefore, contractors who possess these features are asked to tender (Ng et al., 1999).

Chapter 5

PARTNERING TYPE CONTRACT

5.1 Introduction

It is believed that the concept of partnering comes from Japan and the USA from the early 1980s. Partnering type contract provides the option to the project owner in the selection of a contractor by tendering. The project owner and contractor make decisions collaboratively based on materials, equipment and vehicles, sub-contractor in tendering conditions. Partnering in the Construction Industry began to strongly gain popularity in the early 1990s in UK. Moreover, it has received support in both the private and public sector from the existing British Government (Naoum, 2001). The relationship of partnering has been built on trust for mutual goals which provides both parties to understand their expectations and importance for each other (Matthews et al., 2000).

In this chapter, ‘project partnering contract’ which has aroused a lot of interest in the construction industry is explained in detail. This type of contract has been effective in converting a hostile type owner – contractor relationship into a more efficient and cooperative form. In brief, this section includes a literature review from various resources made on how project partnering has been detected, the partner selection process, the concept of partnering, project partnering contract and several studies made under project partnering contract.

5.2 How Project Partnering Emerged

For the past several decades, a great amount of work has been done and a lot of time has been spent on the purpose of enhancing foundational developments in the construction industry such as the terms of value, credibility and profitability. These were achieved from the recommendations of the results of extensive analyses of widespread conditions in the construction sectors which was established in the UK (Latham, 1994) and US (CII, 1991). The main reason of these suggestions is the common thought of inefficient work processes which affect total project costs by increasing overheads (Bresnen and Marshall 2000).

However, the main consideration of the researches has been changed to the relationships of different parties in construction. For instance; according to the Construction Industry Institute (CII, 1991) transforming the traditional relationships to a shared culture without taking the organizational boundaries into account is an essential way to put this regeneration into a successful path. In addition to this, the term partnering refers to the kinds of relationships under the same roof which is the most significant characteristic in this shared culture.

The attention towards the utilization of partnering has risen in the construction industry (NEDO, 1991; CII, 1989). There have been difficulties in enhancing project performance in the 1990s due to the negative outlooks on partnering and cooperation (e.g. Banwell, 1964; Higgin and Jessop, 1965).

Partnering emerged from the improvement of crucial agreements between parties for the purpose of controlling the supply chain in a specified time interval such as

construction. This concept of partnering initially began to spread from USA, Japan and Australia to the world in the early 1980s. Consequently, the method of partnering occurred from traditional procurement failures which is win-lose to combine the project owner criteria and to be able to achieve project targets from the increasing size of the project and arising complications (Naoum, 2003).

5.3 Definition of Partnering Contract

According to Hancher (1989) the Construction Industry Institute has described partnering contract as “a long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. The relationship is based on trust, dedication to common goals, and an understanding of each other's individual expectations and values”. Moreover, a team has been created to check the applicability of partnering as a contract between owners, contractors and engineers by the Construction Industry Institute.

In simple terms, Partnering is a relationship in which (Cook and Hancher, 1990):

- All are stimulated to solve problems
- Win-win solutions (mutual gain) are looked for
- A profitable environment is provided
- Long-term relationships are appreciated
- Trust and honesty are considered main principles

Partnering contracts include items which may cover the following (Simpson, 2001):

- Providing design safety
- Prepared time schedule

- Providing cost control
- Cost savings which are provided by project developments
- Quality for fully finished design and construction completion process
- Being open to ongoing developments
- Being responsive towards the desires of the local community
- Paying careful attention to the environment

To achieve the same project goals, the project owner and contractor need to collaborate. In meetings, it is said that the initial operation costs of traditional project is lower than a partnering project. (Nyström, 2005). However, the time and result of projects show that the partnering has more cost savings.

Partnering on its own cannot be a legal agreement since the contract and specification make it legal between parties. According to The Royal Institute of Chartered Surveyors (2013), partnering contract alternatives are:

- A two party contract adjusted to partnering for a collaborative relationship
- A multi-party partnering contract, generally for complex legal conditions
- A traditional contract with a different partnering agreement.

5.4 Partner Selection Process

A project partnering contract comprises of the project owner organization and the integrated supply team who work together for a single project which can be seen in Figure 1, and generally continues with a competitive procurement. Moreover, the cost of construction can be saved by 2-10% in project partnering (OGC, 2003).

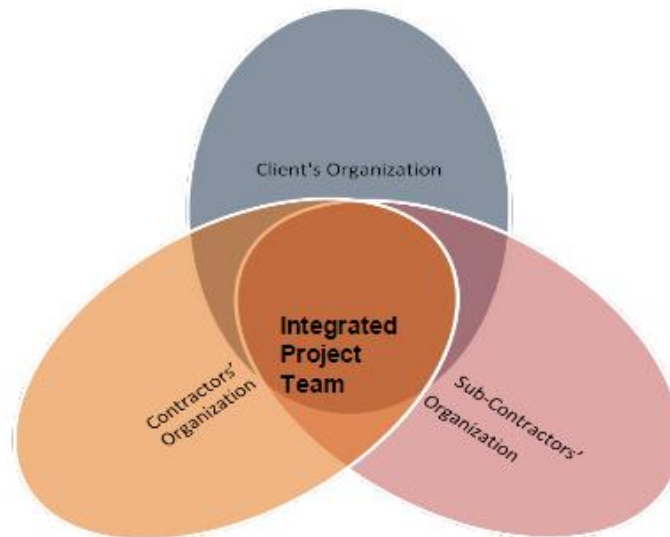


Figure 1: Integrated Project team (OGC, 2003)

The selection process of the contractor is the same with normal public tendering guidelines and concludes with a formal contract. According to Latham (1994), the evaluation of the contractor in tendering should not be based on a single price criterion and should also be evaluated by quality criteria.

After the contractor selection, a nominated subcontractor is generally assigned to work. The main contractor puts a prime cost to his own tender documents such as the work specification. Thereupon, the duty of pricing is given to the main contractor who will be responsible for overheads, providing a safe storage area and facilities etc. Price of Prime cost sum is taken out of the Bill of Quantities, then changed with the accepted subcontractor's valid price and the main contractor's costs are fixed as accordingly (CC&L, 2005).

In Egan's (1998) report, it is stated that the successful and efficient methods of other construction industries should be utilized in their practices. In addition to this, he also

recommended collaboration between project owners and contractors in order to accomplish a goal. Furthermore, Sakal (2005) stated that using the traditional way of the project is not enough to manage the limited budget in complicated projects.

5.5 Types of Partnership

Partnership is comprised of two or more parties that manage projects collaboratively by sharing all kinds of responsibilities for mutual benefits. Two different types of partnership used in the construction industry are strategic alliances and joint ventures.

5.5.1 Strategic Alliances

Strategic alliances are formed between a client, contractor and consultant that agree upon a contract in order to initiate projects of the same structure in a longer time interval. In strategic alliances, requisites are not available at the initial stage of the contract agreement (Broome, 2003).

5.5.2 Joint Ventures

A joint venture is a third company founded by the investment of two partner companies. The joint venture incorporates all kinds of features from the two companies without changing them. It is a continuous and independent business; however the main companies obtain the profits (Kale et al., 2014).

5.6 Concept of Partnering Contract

Partnering contracts provide a framework; see Figure 2, for the formation of common goals in the building team which aims to obtain a negotiation procedure for disagreements as well as to enhance continuous developments. Moreover, this framework diverts collaboration, teamwork and trust into a process and it also allows the participant's efforts to concentrate on project objectives (Naoum, 2003).

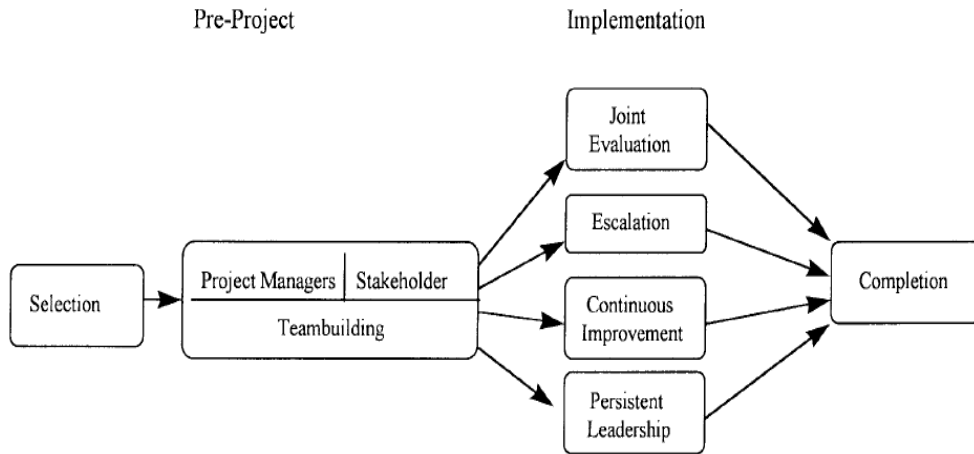


Figure 2: Project partnering framework (Larson, 1997)

Partnering concept emphasizes the relationship between customer-client and competitor-competitor who may receive significant and supplementary opportunities together, however may be prevented by strong barriers. On the other hand, if the appropriate people are gathered in an efficient organizational process, barriers for partnering can be cleared away, and the opportunities can be selected, organized in terms of importance and followed (Stralkowski et al. 1988).

5.7 Project Partnering Contract

The initial standard form of the Project partnering contract is the PPC2000 which has been generated by Cross industry council partnering task force and prepared by UK and Trowers&Hamblins. PPC2000 was originally commenced by Sir John Egan who is the chairman of the construction task force. Also, it can be implemented in any kind of partnered project even in jurisdiction with the support of legal recommendation (Trowers & Hamblins, 2005).

The important differences which separate the project partnering contract from other existing contract forms are (Saunders and Mosey, 2005);

- PPC2000 includes the whole time period of the procurement process
- The combination of the whole project team under one multi-party contract

5.7.1 Integrated Project Team

A project partnering contract gives opportunities to the project-owner, contractor, consultants and experts to sign and meet under a single contract. There is no need for two separate contracts in PPC2000 so this decreases paperwork. Moreover, other voluntary members who want to join the partnering team such as the sub-contractor can participate by signing the same contract (Trowers & Hamlins, 2005).

5.7.2 Integrated Process

A project partnering contract involves early partner selection for the project team, completion of the design in a cooperative mode and also supplying chain group members and prices. Especially, it includes the complete time of partnering relationships, therefore increases the support of the constructor and specialists and encourages them to participate during the crucial period also including supply and construction (Trowers & Hamlins, 2005).

5.7.3 Parties for the Contract

A multi-party contract is formed from the project-owner, constructor and the project-owner's consultants who work together with the same terms and conditions. At the same time, subcontractors can even sign this contract that is selected by constructor (Knowles, 2003).

A Partnering contract must include the following documents (Knowles, 2003):

- Consultants Services Program
- Terms of Partnering
- Key Performance Indicators

- Agenda of Partnering
- Project Partnering Agreement
- Proposals of Project
- Price Framework
- Brief information about project
- Consultants Payment Terms

5.7.4 Building up Designs in Project Partnering Contract

In the Project Partnering contract, there are a number of steps applied for the project-owner needs (Saunders and Mosey, 2005):

- Minimizing the risk for unexpected price change by analyzing and managing
- Increase in cost savings which is obtained with the decreasing number of risks.
- Designs are developed with the advice and contributions of the contractor and a temporary professional sub-contractor.
- The completion of an Agreed Maximum Price which is underpinned by a full price Framework, including an entire supply chain and after the completion of whole pre-conditions, the project is started on site.
- Analysis is made separately for any source selection such as choosing the most appropriate labor and analyzing the tendering of the other sub-contractors.
- Confirmation of works packages and subcontractors agreement

5.8 Results in Partnering

There are many reasons why partnering a project is advantageous. Although the results are hard to evaluate, partners still consider them as benefits. Among these are the decline of legal actions taken and the incomplete disputes in the finalization stage

of the project. Cooperation and collaboration in the team and the transparency in communicating are the steps taken to resolve issues. Furthermore, partnering raises the quality of the project due to the full involvement.

A good example of partnering is from a CII survey report which showed that the project owner costs declined by eight per cent, the gain of profits for the contractor raised ten per cent and schedules were minimized by seven per cent (Hancher. et al. 1991). Management deals majority of the partnering costs which were also inside the project overhead (Mobile, 1990).

Partnering contracts have gained importance and has been accepted as the approach in contractor-owner relationships. The Associated General Contractors of America awards the Marvin M. Black Excellence in Partnering Award to high quality partnering every year. It initially began in 1993, when eight contractors were awarded for their projects which are listed in Table 1 below (constructor, 1993).

Table 1: Winners of Partnering Award (Constructor, 1993)

Project	General Contractor	Owner	Project Size
Sheplars Western Near Las Vegas, NV	Jaynes Corporation Albuquerque, NM	Kabuto International	\$1 million
French Creek Pumping Station Snohomish, WA	Thompson-McDougall, AJV Portland, OR	Soil Conservation Service	\$6.2 million
Secure Assemble and Test Facility San Diego, CA	Kvaas Construction Co Inc San Diego, CA	U.S. Navy	\$7.5 million
School Of Americas Fort Benning, GA	Connor Bros. Construction Co. Inc. Auburn, AL	U.S. Army	\$24.8 million
F117A Stealth Fighter Maintenance Docks/Hangers Holloman AFB, NM	Hensel Phelps Construction Co. Austin, TX	U.S. Air Force	\$54.1 million
Kitt Peak Observatory Road Pima County, AZ	Granite Construction Company Watsonville, CA	Arizona Department of Transportation	\$1.1 million
John Deere Family Health Care Clinic Moline, IL	Estes Company Davenport, IA	John Deere Inc.	\$3.1 million
West Mixmaster Polk County, IA	Cedar Valley Corporation Waterloo, IA	Iowa Department of Transportation	\$3.7 million

Partnering was the topic of interest at the 1994 Annual Conference in the sixth year as it focused on the enhancement of project partnering. Tables 2, 3, 4 shows highlight the increase of partnering use in different public enterprises.

Table 2: Increased usage of partnering (Gray, 1994)

Agency	Results
U.S. Army Corps of Engineers	1988 3 Partnered Projects 1993 35 Partnered Projects
Departments of Transportation	1990 2 DOTs Use Partnering 1993 40 DOTs Use Partnering
CII Members	1993 Survey 84% of respondents Used Partnering/Team Building 31% Extensively Used Partnering 17% Some Use of Partnering

Table 3: Decrease of claims in Partnered Projects (Gray, 1994)

Agency	Results
Texas DOT	Prior to Partnering 28 Claims/year 70 Partnered Projects 1 Claim
Arizona DOT	1991 60 Claims: Begin Partnering 1992 20 Claims 1993 1 Claim(non-partnered job)

Table 4: Developments of project from Partnering (Gray, 1994)

Agency	Results
U.S. Army Corps of Engineers	Study of 50 Partnered Projects Cost Changes Down 14% Schedule Changes Down 10% Claim Costs Down 7.5% Value Engineering Up .4%
Arizona DOT	Savings from Partnering \$7,313,530 Cost of Partnering \$1,500,000 Net DOT Savings \$5,813,530

Further examples of successful partnership projects are represented in Table 5. Kansas Contractor Association/ Kansas Department of Transportation Partnering award program selected six districts, each being rewarded with three levels of awards; below \$500,000, \$500,000 - \$3,000,000 and more than \$3,000,000 for the recognition of excellence in partnering (KDOT, 2012).

Table 5: KCA/KDOT Partnering Award Winners for 2012 (KDOT, 2012)

Districts	Levels of Awards	KCA/KDOT Partnering Award Winners
District 1	< \$500,000	Bridges Inc. and the Horton KDOT Construction Office (\$386,337) Project # 36 KA 2678-01
	\$500,000 to \$3,000,000	None submitted
	Over \$3,000,000	SEMA Construction Inc. and the Wamego Construction Office (\$64,852,000) Project # 18-81 KA 0410-03/18-81 KA 0410-06 tied together
District 2	< \$500,000	Reece Construction Co. Inc. and the Salina KDOT Construction Office (\$153,709) Project # 70-85 KA 2801-01
	\$500,000 to \$3,000,000	Dustrol Inc. and the Marion KDOT Construction Office (\$1,740,995) Project # 057 KA 2454-01
	Over \$3,000,000	A.M. Cohron & Son, Inc. and the Junction City KDOT Construction Office (\$4,446,524) Project # 24-14 KA 0708-01
District 3	< \$500,000	Reece Construction Co. Inc. and the Phillipsburg KDOT Construction Office (\$254,000) Project # K18-82 KA 1807-01
	\$500,000 to \$3,000,000	None submitted
	Over \$3,000,000	APAC Kansas Inc. – Hays and the Atwood KDOT Construction Office (\$7,080,225) Project # 70-91 KA 0719-01
District 4	< \$500,000	B & B Bridge Company, LLC and the Pittsburg KDOT Construction Office (\$300,017) Project # 126-19 KA 2269-01
	\$500,000 to \$3,000,000	B & B Bridge Company, LLC and the Pittsburg KDOT Construction Office (\$1,389,159) Project # 47-19 KA-0697-01
	Over \$3,000,000	None submitted
District 5	< \$500,000	None submitted
	\$500,000 to \$3,000,000	Wildcat Construction Co. and the Wichita-Hillside KDOT Construction office (\$641,189) Project # 96-087 KA 2723-01
	Over \$3,000,000	Koss Construction and the Hutchinson KDOT Construction office (\$41,122,029) Project # 61-78 K 8252-01
District 6	< \$500,000	None submitted
	\$500,000 to \$3,000,000	J & R Sand Co. and the Syracuse KDOT Construction office and the Lakin Sub-Area Maintenance Office (\$1,306,748) Project # 25-47 KA 2577-01
	Over \$3,000,000	None submitted

5.9 Comparison of Partnered and Non-partnered Projects

This section gives brief information about various non-partnered and partnered projects which have been compared by COE and NAVFAC projects.

5.9.1 COE and NAVFAC Projects

A different study has been made for the comparison purpose on large projects based on partnering and non-partnering. However, significant comparisons on small projects based on the same areas are not available yet. Despite this, the advantages which have been obtained from large projects are expected to be the same in small partnered projects (Conley and Gregory, 1999). These large projects were appraised according to cost change, duration change, claims cost, change orders and value engineering savings. The evaluation of COE was made by a researcher team and another separate team analyzed the NAVFAC projects which can be seen in Table 6 and 6. According to the studies of Weston and Gibson (1993), Table 6 shows the results of 28 non-partnered and 16 partnered COE projects. As well as this, 100 non-partnered and 39 partnered NAVFAC projects results found by the Naval Facilities Engineering Command are stated in Table 7 (Schmader, 1994).

Table 5: Comparison table of COE projects as partnered and non-partnered (Weston and Gibson, 1993)

Mean criterion (1)	Partnered N = 16 (2)	Nonpartnered N = 28 (3)
Cost change (%)	2.72	8.75
Duration change (%)	9.07	15.53
Change orders (%)	3.89	7.74
Claims cost (%)	0.67	5.01
Value engineering savings (%)	0.73	0.05
Mean contract award price (dollars)	10,368,643	11,448,745

Table 6: Comparison table of NAVFAC projects as partnered and non-partnered (Weston and Gibson, 1993)

Mean criterion (1)	Partnered N = 39 (2)	Nonpartnered N = 100 (3)
Cost change (%)	11.20	9.79
Duration change (%)	13.54	25.93
Change orders (%)	11.34	9.38
Claims cost (%)	0.04	0.57
Value engineering savings (%)	0.17	0.01
Mean contract award price (dollars)	11,190,681	4,887,601

5.10 Case Studies on the Application of Project Partnering Contract on Certain Projects

Project partnering contract has been implemented in various construction projects. The following case studies show what has been achieved by the use of this contract type.

5.10.1 USA Army Corps of Engineer and Nepean's Hospital

The USA Army Corps of Engineers worked on partnering which was researched for large and small contracts. The results showed that there was an 80–100% decrease on exceeding costs, removal of exceeding time, a 75% decrease in the usage of paperwork, important developments in site safety and better morale (Sawczuk, 2002). Furthermore, similar benefits were obtained in the completion of the Nepean Hospital extension in Australia. Among these advantages are the early completion of the project, the lower budget, the efficient use of time for less industrial conflicts and the site's safety which was found fairly higher than the average (Naoum, 2003).

5.10.2 Bermondsey City Academy

Bermondsey City Academy, as can be seen in Figure 3, was built under PPC2000 for about 22 million pounds. London Academy selected the Company of Willmott Dixon to undertake the risk management of cost, time, on site waste and site limitations. Consequently, the open-book prices were completed as robust fixed price which was

included in the budget and was also encouraged by commercial incentives to look for shared savings. All risks were overcome by using PPC Risk Register such as approaching the restricted site and clearing of on-site waste. Moreover, this project got the award ‘Better Public Building Award 2006’ from the Prime Minister (Mosey et al., 2008).



Figure 3: Bermondsey Academy (Mosey et al., 2008)

5.10.3 Other PPC Public Sector Results

Mosey et al. (2009) reported that “The Department of Work and Pensions, a £737m fast-track programme for the renovation and construction of 969 Job Centres/Benefits Offices using PPC2000 with main contractor and subcontractor framework agreements achieved 24.8% cost savings against budget and won awards for procurement and health and safety”. See Figure 4.



Figure 4: Department of Work and Pensions (Mosey et al., 2009)

Another project used with PPC2000 is Hackney Homes, as shown in Figure 5. “It is a £240m housing renovation programme which has gained 20% cost saving by using long-term supplier and subcontractor framework agreements” (Mosey et al., 2009).



Figure 5: Hackney homes (Mosey et al., 2008)

5.11 Advantages of Partnering Type Contract in Construction

Industry

Egan (1998) pointed out the tangible benefits of partnering in his report “Rethinking construction”. The benefits were obtained from the data collected from well-known organizations. In addition to this, Black et al., (2000) and Haksever et al., (2001) has also found related performance developments accomplished by using Egan results as guidance. Table 8 shows the tangible benefits of partnering:

Table 7: Advantages of Partnering Type Contract (Beach et al., 2005)

Area	Improvement per year	Detail	Improvement reported detail
Capital cost	10 % Reduction	All costs excluding finance	Lower bidding prices Reduce costs
Construction time	10 % Reduction	Time for client approval To practical completion	Fewer disputes Reduce claims and litigations Improved time-scales
Predictability	20 % Increase	Number of projects completed on time and within budget	Reduction in design cycle Fewer programme overruns
Defects	20 % Increase	Reduction in number of defects on hand-over	Improved quality Improved design Fewer defects
Accidents	20 % Reduction	Reduction in the number of reportable accidents	None
Productivity	10 % Increase	Increase in the value added per head	Reduce supervision costs
Turnover and profits	10 % Increase	Turnover and profits of construction firms	Fewer cost overruns Improved return on resources Increased market share

Chapter 6

QUESTIONNAIRE SURVEY AND DATA ANALYSIS

6.1 Introduction

Until this point, background information on construction contracts, construction delivery methods, estimating and tendering, and partnering type contract has been covered.

In the case of Northern Cyprus, traditional contracts have been used among parties for many years and this has caused conflicts between project owners and contractors. This has resulted in court and lose-win cases, and has led to other similar consequences. No research has been carried out on new systems to solve these issues. To fulfil the aims of this study, a modern contractual approach, known as Partnering type contract, is introduced to project owners and contractors. In order to collect the data, a comprehensive questionnaire survey method has been used.

This chapter describes the questionnaire survey used in the study in terms of its design, presents the analysis of the data collected from the questionnaire and discusses the results of the study.

6.2 Questionnaire Survey

As previously noted, a questionnaire survey was carried out among construction contractors and project owners in the Northern Cyprus construction industry. Brown (2001) describes questionnaires as “Any written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers.”

6.2.1 Design of Questionnaire

The questionnaire includes a combination of open-ended questions and closed-ended rating scale questions which was conducted in the form of a face-to-face interview. In order to collect accurate information, two separate questionnaires were designed (See Appendix A and B) for construction firms and project owners that have project collaboration experience in the last 3 years (2012, 2013 and 2014). Out of 52 attempts to conduct interviews with contractors, 28 accepted to take part in the study. These contractors were asked to give the names of their project owners in the last 3 years. Among 46 project owners, 25 were selected randomly for further interviews. Table 9 presents the percentages of the respondents’ professions. The response rate of the overall survey is 55% which is shown in Figure 6. In order to obtain accurate results, some parts of the questionnaire responses were calculated over 5 out of 10. The reason for this was to determine largest problems as the scale ranks from 1 meaning “no problem at all” to 10 meaning “a big problem”.

Table 8: Percentages of project owners' and contractors' professions

Profession of the respondents	Number of Project owners Out of 25	Percentage of Project owners (%)	Number of contractors out of 28	Percentage of Contractors (%)
Civil engineer	-	-	12	42,85 %
Architecture	-	-	9	32,14 %
Mechanical Engineer	-	-	2	7,1 %
Building technician	-	-	5	17,8 %
Public officer	12	48 %	-	-
Teacher	4	16 %	-	-
Government	5	20 %	-	-
Firm	4	16 %	-	-

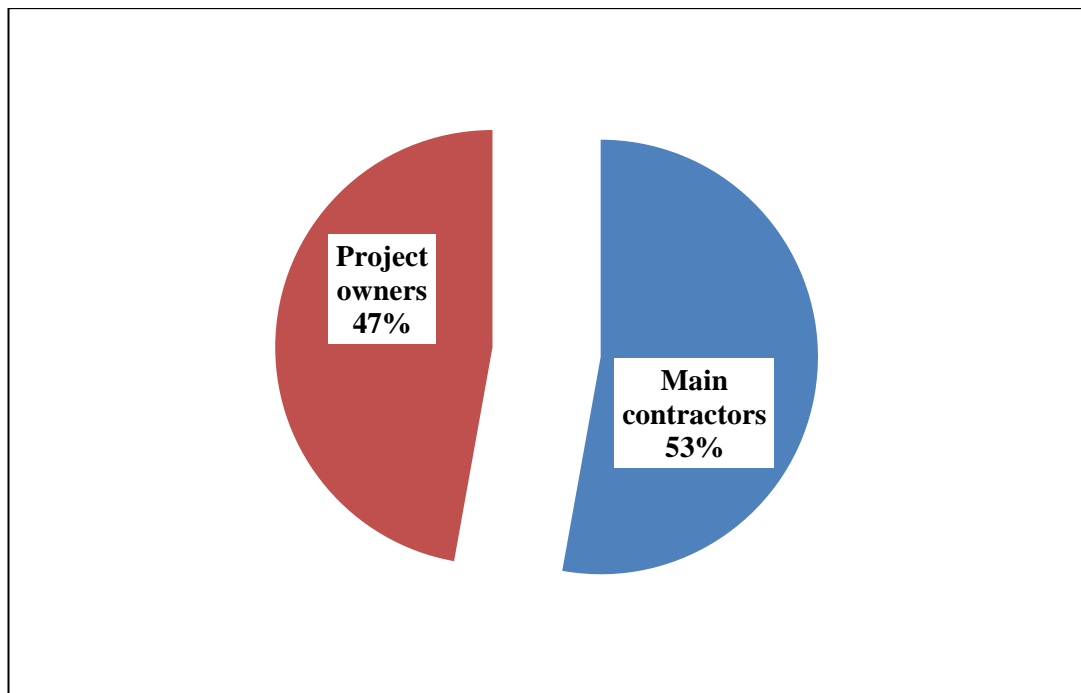


Figure 6: Presents the overall average of all the participants (28 main contractors and 25 project owners) who responded to the questionnaire

The questionnaire used for this study is divided into three main sections; the first two sections include the same questions for both participants whereas section three includes different questions which are intended for the different group of participants. In addition to this, the questionnaire was carried out in Turkish.

The contractor-oriented questionnaire is made up of the following three sections:

- i. Problems that are faced in construction companies (contractors) and the actions taken to solve these problems
- ii. Suggestions to solve these problems
- iii. Information about the company

The project owner-oriented questionnaire is made up of the following three sections:

- i. Problems that are faced by project owners (clients) and the actions taken to solve these problems
- ii. Suggestions to solve these problems
- iii. Information about the project owner

The first section of the contractor-oriented questionnaire is divided into three different parts. The first part asked a question about different problems contractors faced in a project relationship with project owners in the last three years. The question included a table with various problems for the contractor to rank from 1 (no problem at all) to 10 (a large problem). Some of the problems in the table were materials, workmanship, subcontractor and the quality of construction.

In the second part, contractors were asked to write a description of the big problems they faced in a project relationship with project owners. The final part asked the

contractors to state the actions taken to overcome these problems and the results of the taken actions.

The second section of the questionnaire is divided into two parts. In the first part, contractors were asked to give recommendations on how to solve the previously mentioned problems. In the second part of the questionnaire, by considering Partnering contract type, which is defined in the questionnaire, the contractors ranked the use of it (ranges from 0 for ‘definitely doesn’t resolve the problem’ to 10 for ‘definitely resolves the problem’).

Up to this stage, the questions used in the first and second section of the contractor-oriented questionnaire were also applied in the project owner-oriented questionnaire except that the instructions prepared according to the viewpoint of the project owner instead of the contractor.

The third and last section of the questionnaire which consists of one part only asks the project owner and contractor to complete personal information. The questions for the project owner differ from the contractor’s.

6.3 Data Analysis

The data collected from the contractors and project owners are analysed under two main sections: Contractors and Project owners. Each section is specified with figures to show the results of the participants’ responses for each part of the questionnaire.

6.3.1 Contractors

Figure 7 shows the problems that were encountered during the project process in the last three years. In order to obtain the size of the problems, contractors stated the

degree of each problem they faced with their project owners. The scale ranges from 1 referring to “no problem at all” to 10 referring to “a large problem.” Nowadays, the degree of the problems experienced with project owners in the construction sector differs according to the size of the firms. Thus, Figure 8 represents the response average rates given out of ten for each specific problem category based on the number of workers who work in the firms of the Northern Cyprus construction sector.

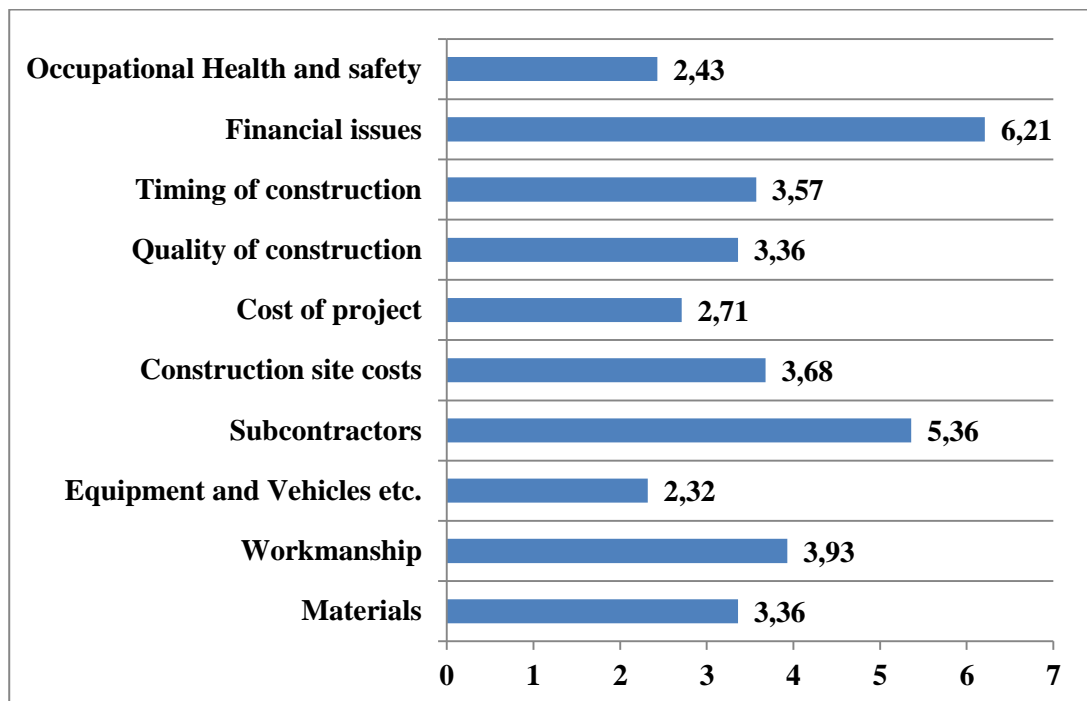


Figure 7: The average of the responses given out of 10 by contractors for the problems encountered in the last three years

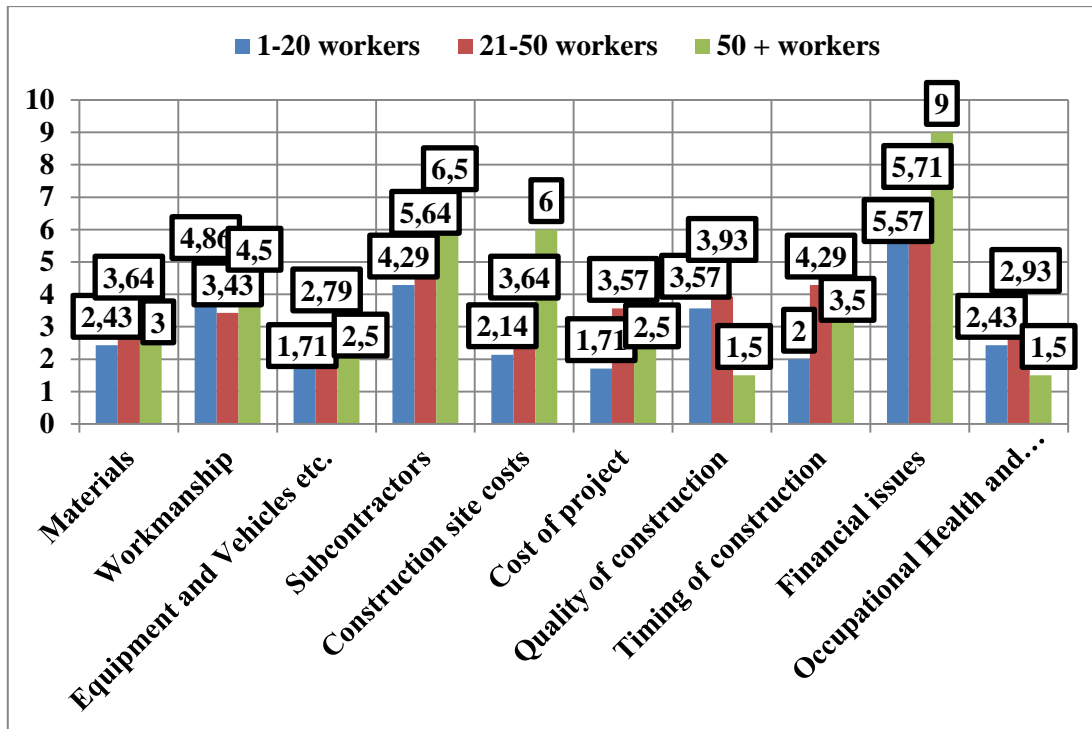


Figure 8: The average of the problems encountered out of 10 based on the number of workers of contractor firms

6.3.1.1 Problems Encountered by Contractors during Project Process

This section illustrates the responses given to each problem experienced by contractors with the project owners in the Northern Cyprus construction sector. The percentages of each problem and the responses are shown in separate figures. The percentages of material problems rated over 5/10 by 39.3% of the contractors can be seen in Figure 9. Specifically, three problems are clarified by contractors with a high percentage in the use of cheap materials. A possible reason for this is because taxes in Northern Cyprus are too high therefore third grade materials are imported into the country.

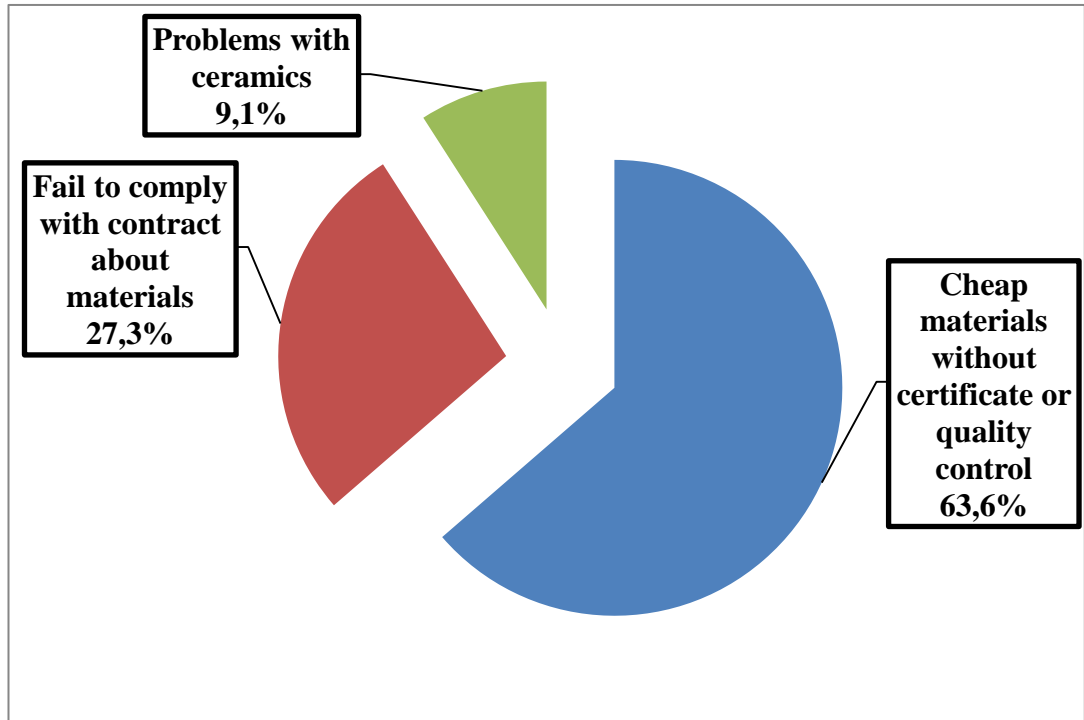


Figure 9: The percentages of the contractors' problems experienced with materials

Figure 10 shows the percentages of the problems of workmanship rated over 5/10 by 39.9% of the contractors. The largest problems that contractors encounter are the large number of unqualified workers. This is because construction companies emphasize that there is lack of qualified workers in Northern Cyprus and the ones which are available demand excessive payments from contractors. By comparing with other problems, it is clear that this is a serious matter in the construction sector.

Figure 11 represents the percentages of the problems of sub-contractors rated over 5/10 by 78.9% of the contractors and it is clearly seen that 50.0% of these problems occur due to sub-contractors who fail to comply with technical contracts. This may be because sub-contractors undertake more responsibilities than their actual workload, therefore, cannot complete assigned works at the specified time.

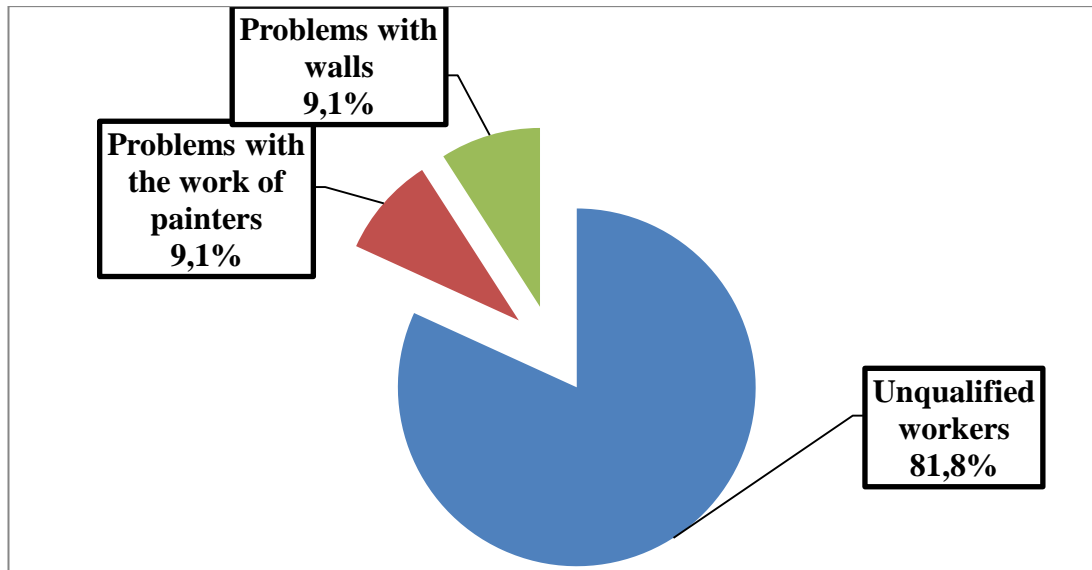


Figure 10: The percentages of the contractors' problems experienced with workmanship

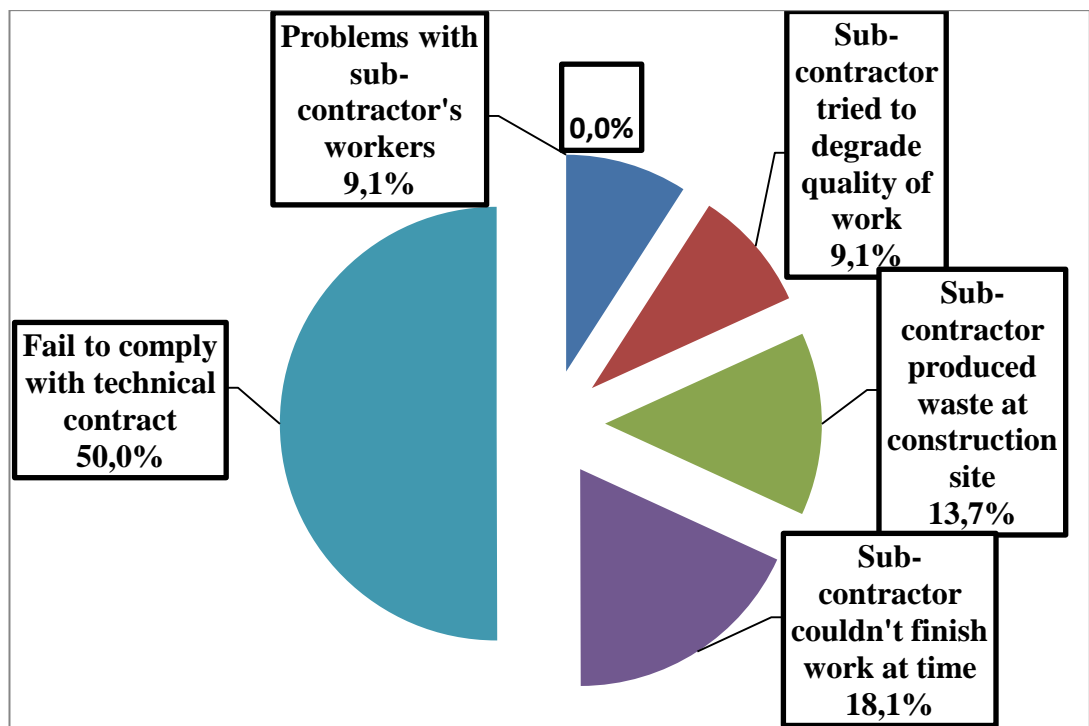


Figure 11: The percentages of the contractors' problems experienced with sub-contractors

Figure 12 shows the percentages of the problems of construction site costs rated over 5/10 by 21.4% of the contractors. It is obvious that 33.3% of the problems are about materials stolen from the construction site which is a huge financial loss. Moreover,

the same percentage of problems indicates that contractors are not satisfied with receiving electricity late.

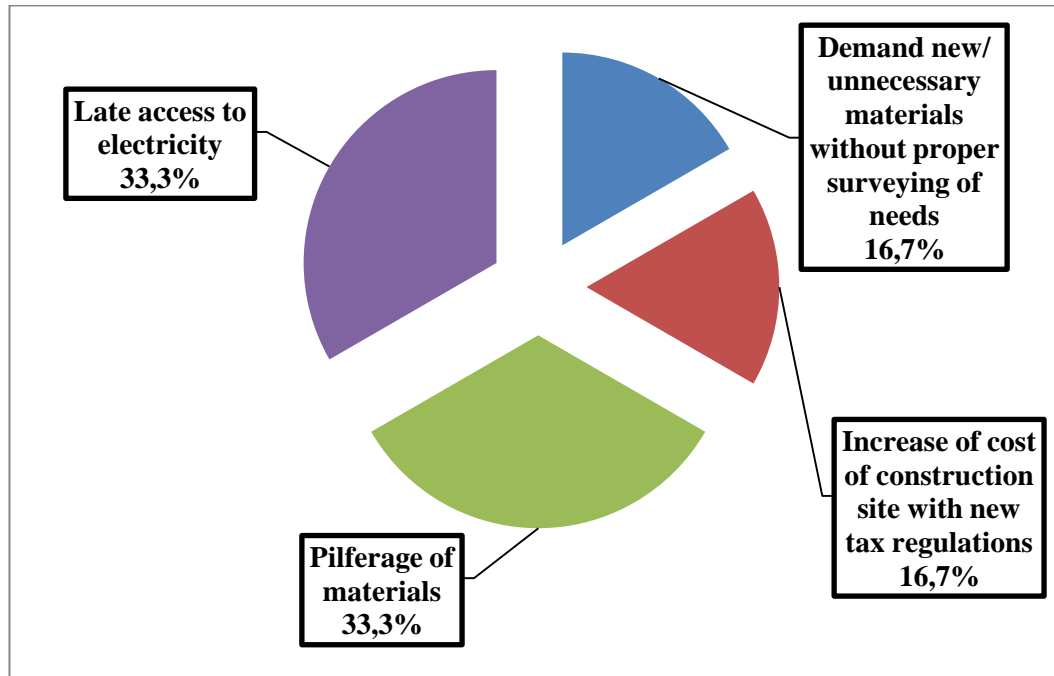


Figure 12: The percentages of the contractors' problems experienced with construction site costs

Figure 13 represents the percentages of the problems of project costs rated over 5/10 by 21.4 % of the contractors. The largest problem in this area is about changes demanded by project owners which increases project cost. The reason for this demand is because project owners ask for alteration in the project when their expectations are not met; therefore, the project becomes revised with an additional cost for the contractor.

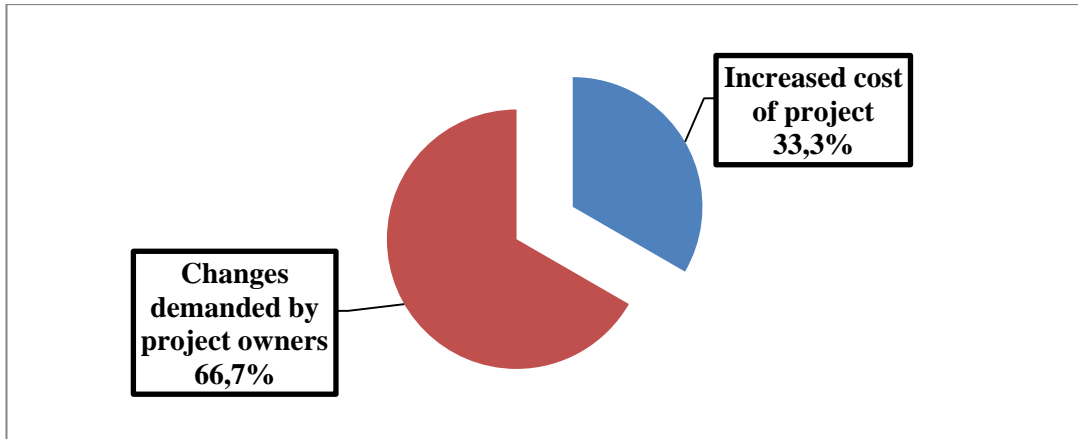


Figure 13: The percentages of the contractors' problems experienced with project costs

Figure 14 shows the percentages of the problems of general quality rated over 5/10 by 28.6 % of the contractors. 62.5% of problems points out that sub-contractors use low quality materials in construction and 37.5% of the problems are about the employment of unqualified workers who perform very poorly in the job thus lowering the quality. Again, the reason for using low-quality materials is due to third grade materials being preferred.

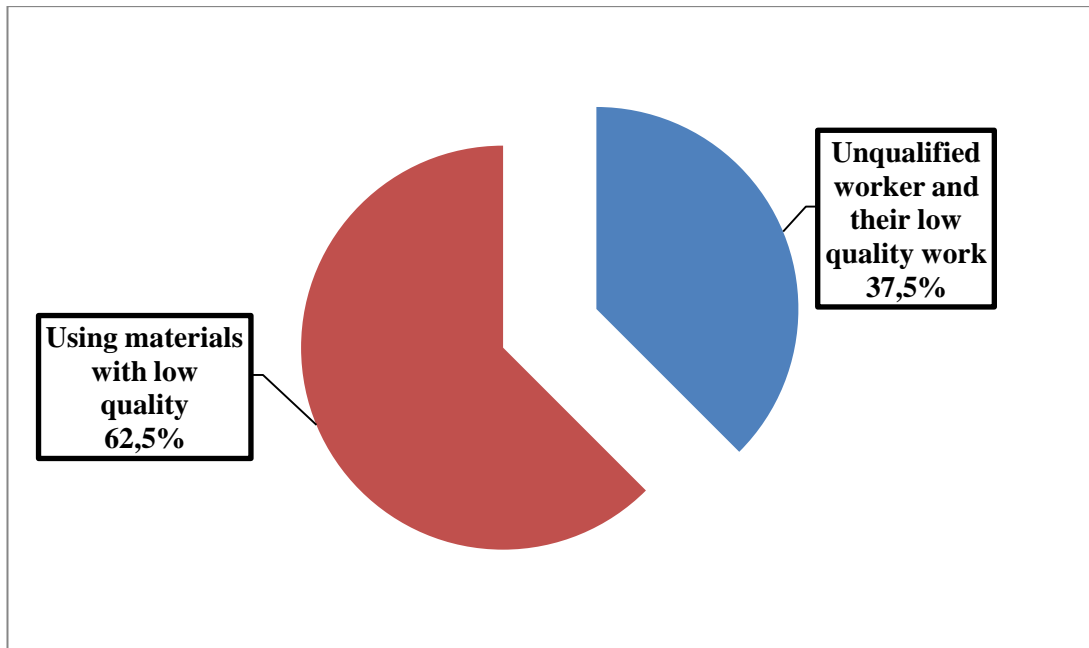


Figure 14: The percentages of the contractors' problems experienced with general quality

Figure 15 represents the percentages of the problems of timing rated over 5/10 by 42.9% of the contractors. Among all timing issues, the biggest problem for contractors is due to subcontractors failing to comply with the timing in contract. In these cases, the project is delivered late to the project owners.

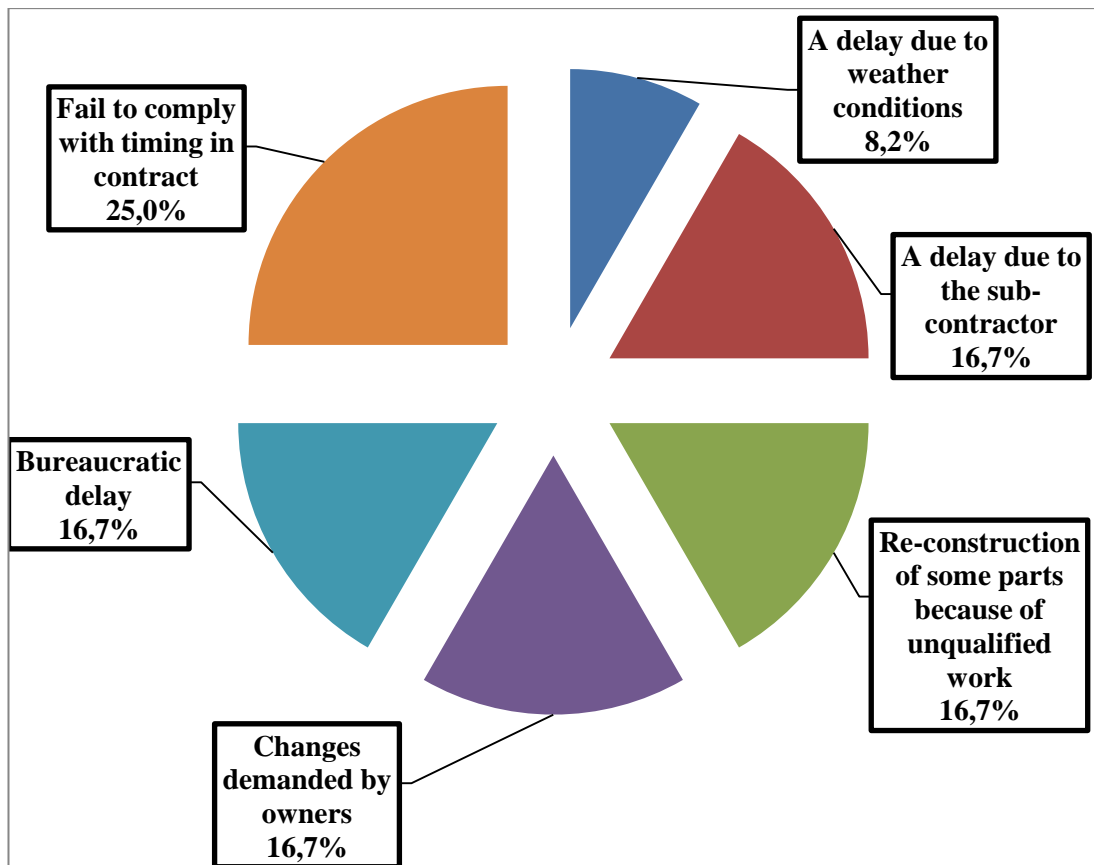


Figure 15: The percentages of the contractors' problems experienced with timing

Figure 16 shows the percentages of the problems of financial issues rated over 5/10 by 60.7% of the contractors. The higher percent of the problems are about not receiving any payments at all and the conflicts which arise due to the extra cost of extra work. Irregular payments are made because when the exchange rate rises, the instalment increases which restrains the project owner in making payments.

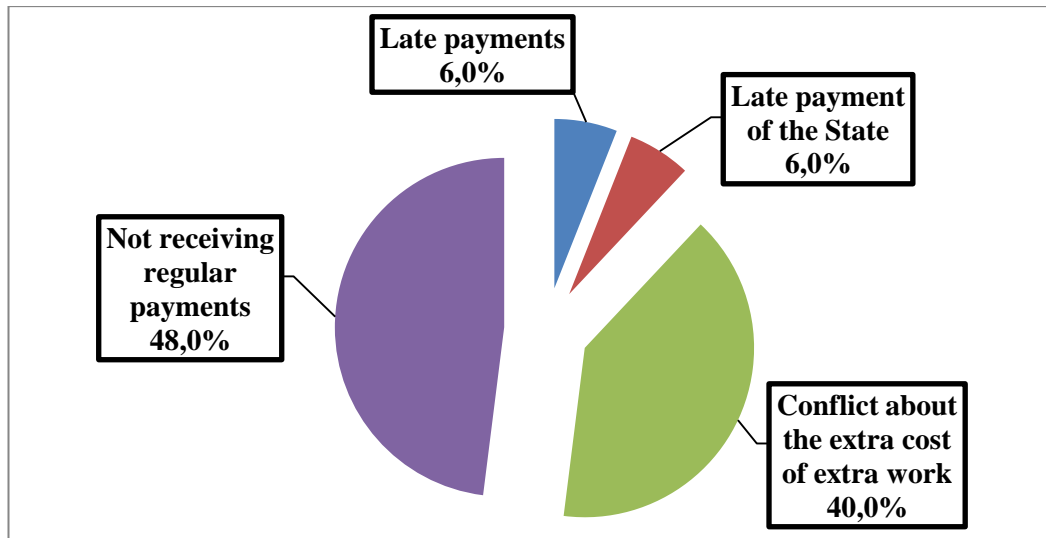


Figure 16: The percentages of the contractors' problems experienced with financial issues

Figure 17 presents the percentages of the problems of occupational health and safety rated over 5/10 by 7.2% of the contractors. 59.0% of the problems shows that sub-contracts are not aware of safety regulations therefore provide an insecure environment for workers. The reason for this is because the government does not supervise construction sites regularly. 41.0% of the problems points out that an occupational safety expert is required in the construction site.

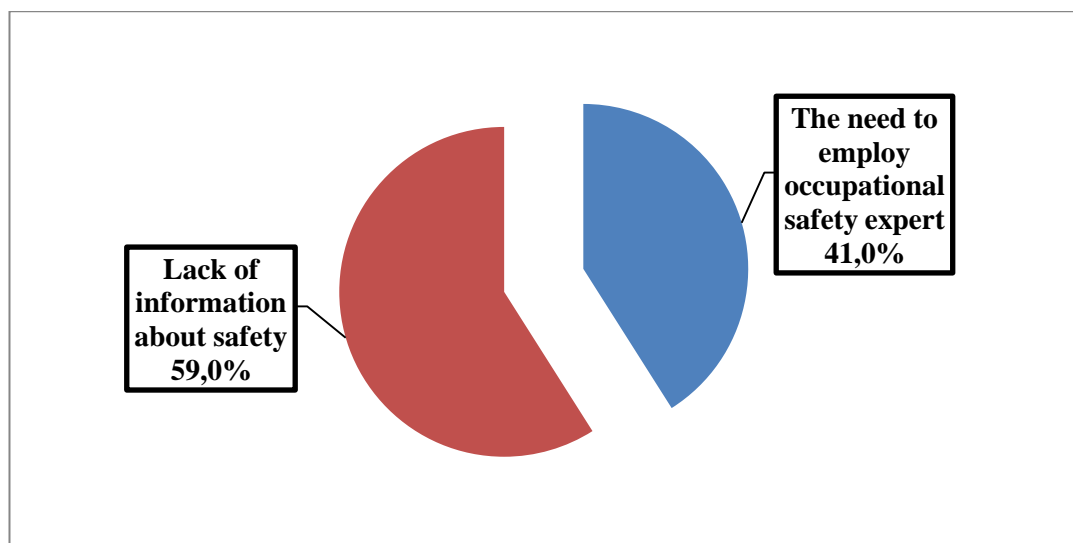


Figure 17: The percentages of the contractors' problems experienced with occupational health and safety

6.3.1.2 Actions Taken by Contractors to Solve Problems

In this section, actions taken by contractors according to the problems specified in the previous section as well as their percentages are stated in separate figures. Figure 18 shows the six different actions taken by contractors to solve problems on materials. On the other hand, Figure 19 represents the percentages of various actions taken to solve occurred problems on workmanship. It can be seen that the majority of contractors replaced the sub-contractors when problems were experienced.

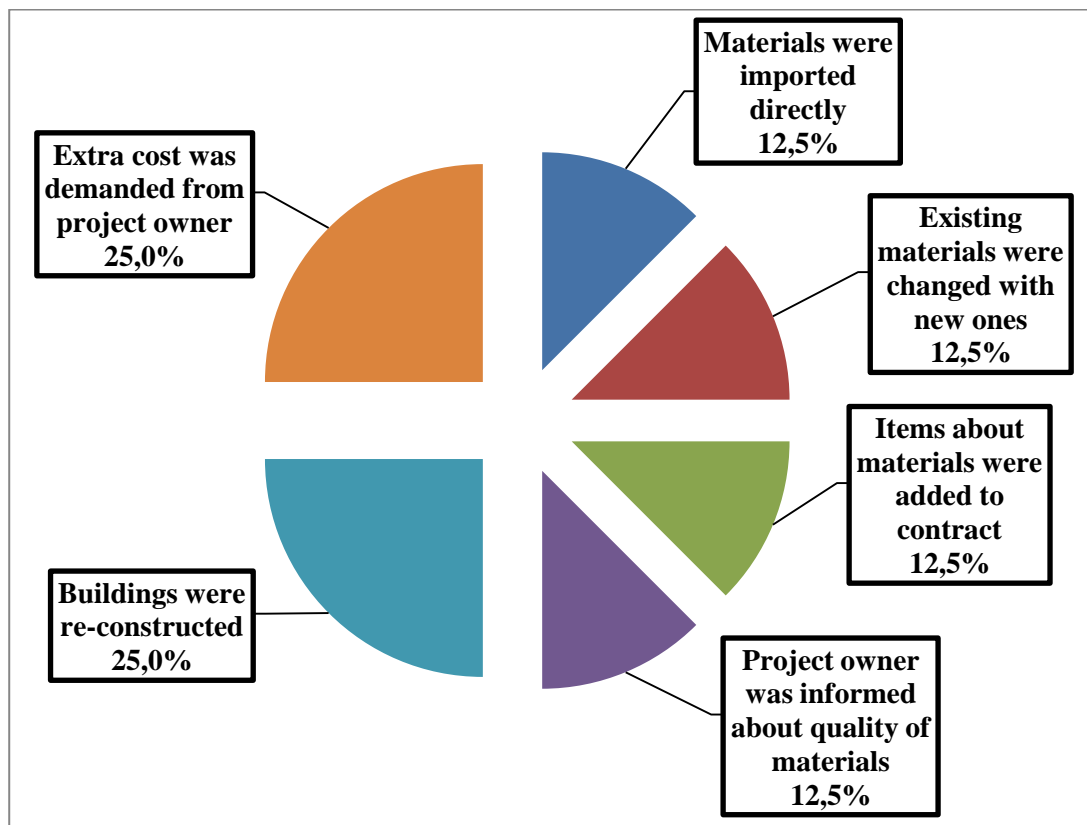


Figure 18: The percentages of actions taken to solve occurred problems of materials

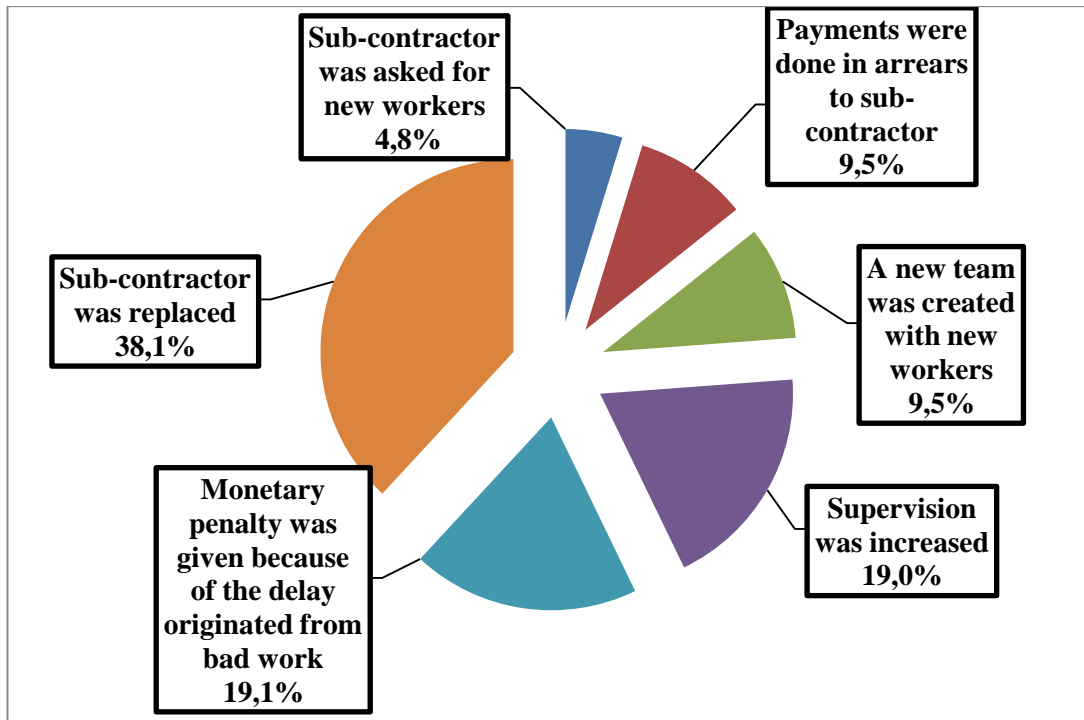


Figure 19: The percentages of various actions taken to solve occurred problems of workmanship

Figure 20 shows the percentages of few actions taken to solve occurred problems on sub-contractors. Many of the contractors replaced the sub-contractors directly which can be seen clearly in Figure 20. Figure 21 shows only one action that was taken to solve the occurred problems with construction site costs by contractors.

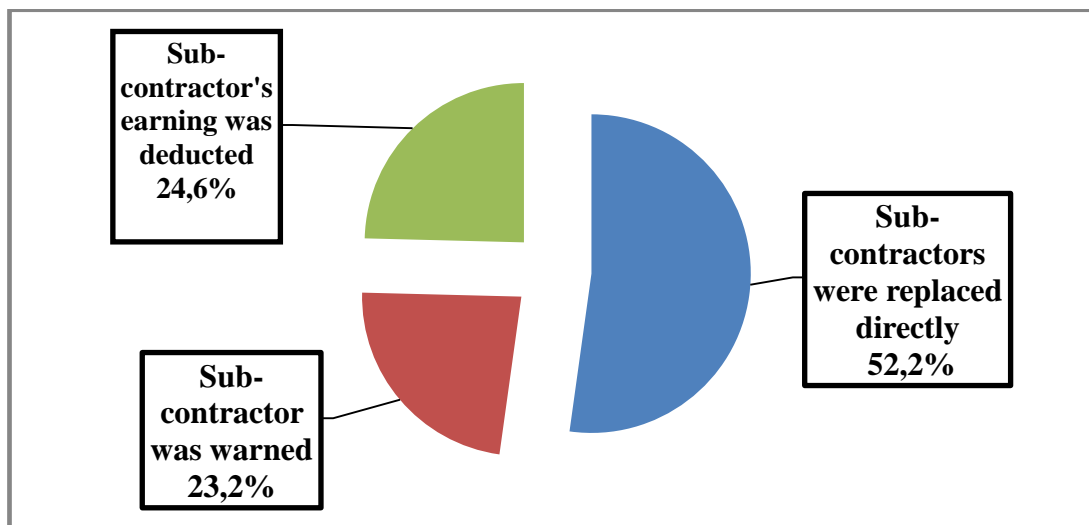


Figure 20: The percentage of an action taken to solve the sub-contractors problems

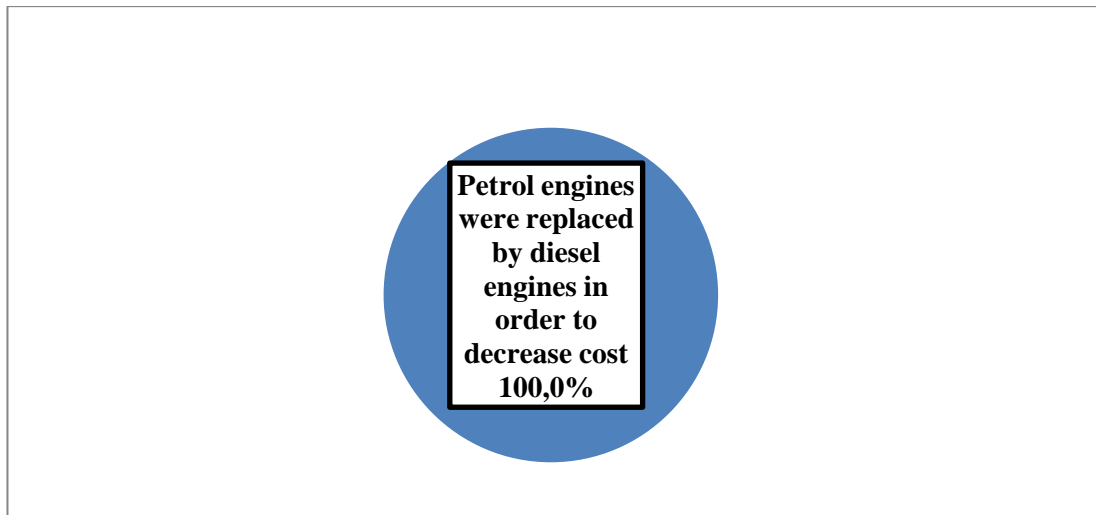


Figure 21: The percentage of an action taken to solve occurred problems of construction site costs

Three actions were taken to solve the occurred problems in Figure 22. In 40.0% of the actions taken, the work process was slowed down and payment was demanded from project owners. On the other hand, the same percentage shows that negotiation took place with the owner however solutions were not found to problems.

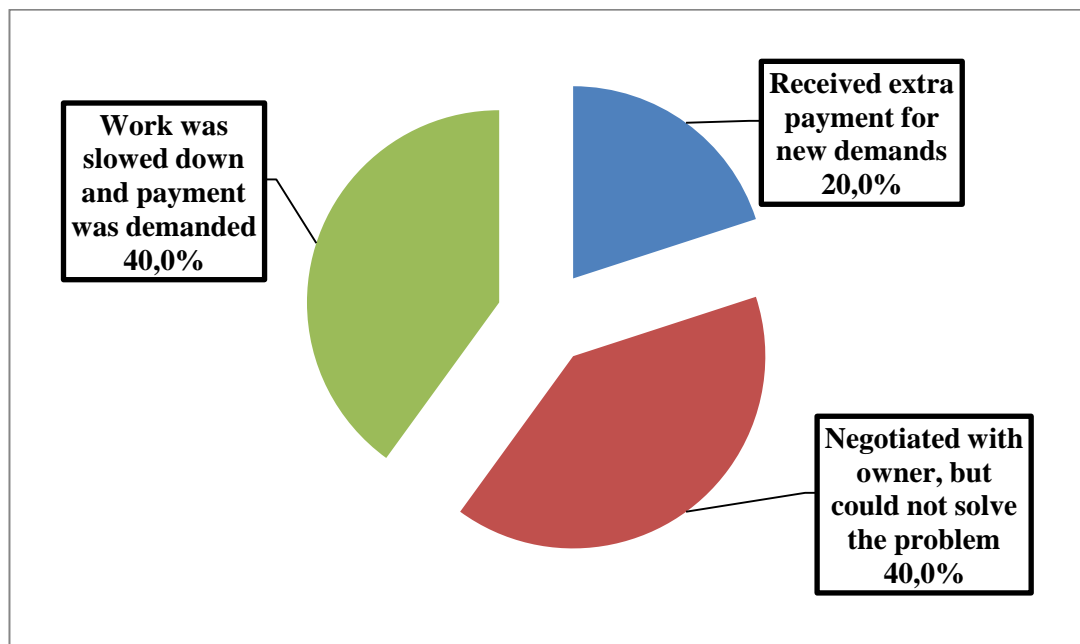


Figure 22: The percentages of few actions taken to solve occurred problems of project costs

Various actions were taken to solve occurred problems on the quality of work by contractors in Figure 23. The bigger percentage of the contractors increased the level of the quality of materials. However, a few actions were taken to solve the timing problem in Figure 24. Half of the actions taken by contractors were the extra work carried out to please the project owners.

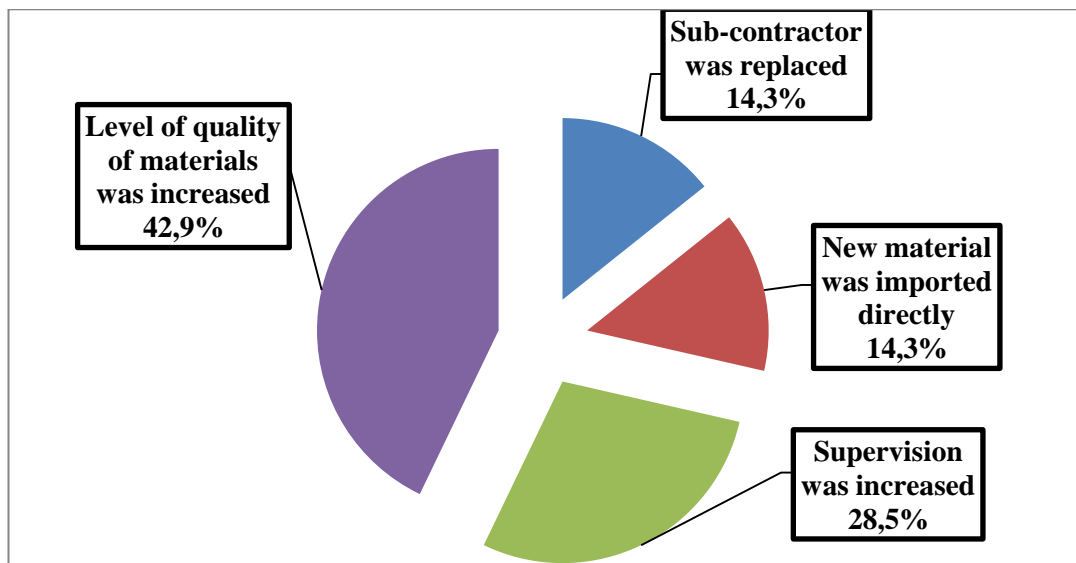


Figure 23: The percentages of various actions taken to solve occurred problems of the quality of work

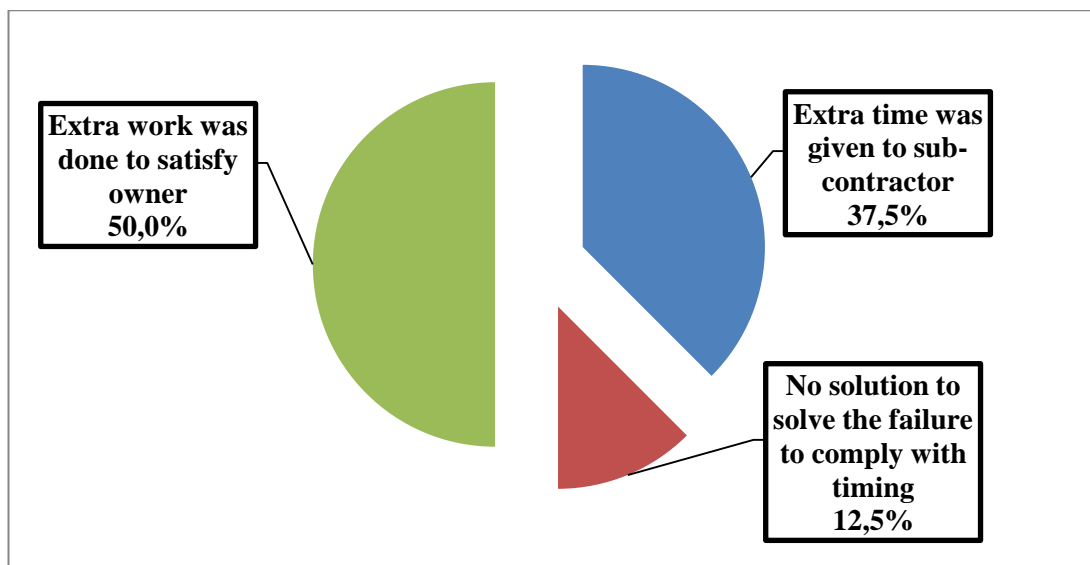


Figure 24: The percentages of few actions taken to solve occurred problems of timing

In Figure 25 two actions were taken to solve the financial problems. 66.7% of these actions were demanding and obtaining extra cost from project owners before the completion of the project whereas others applied to court to seek for a solution.

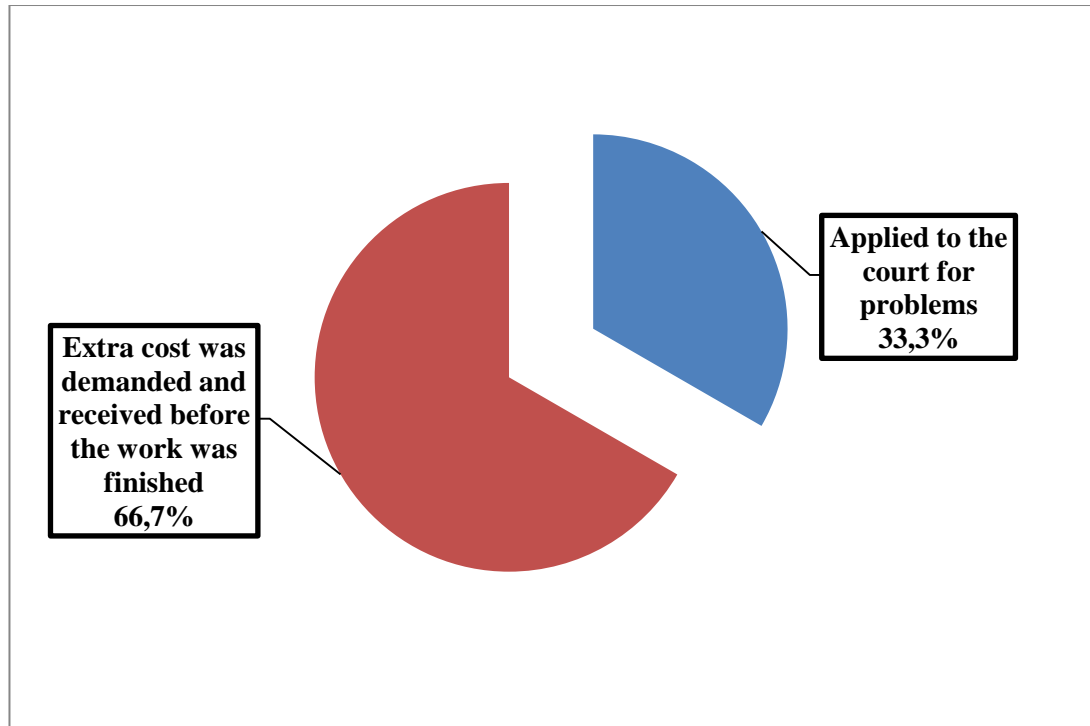


Figure 25: The percentages of two actions taken to solve occurred problems of financial problems

6.3.1.3 Suggestions of Contractors to Solve Problems

This section shows separate figures for suggestions made to avoid problems with project owners in different areas. The suggestions are proposed by contractors in the Northern Cyprus construction sector.

Four suggestions were given to solve problems on materials in Figure 26. The majority of the suggestions given are about allowing the import trade of only standard materials. Furthermore, many suggestions were given to solve problems of

workmanship in Figure 27. The highest percentage of suggestions indicates that training is necessary to develop qualified workers.

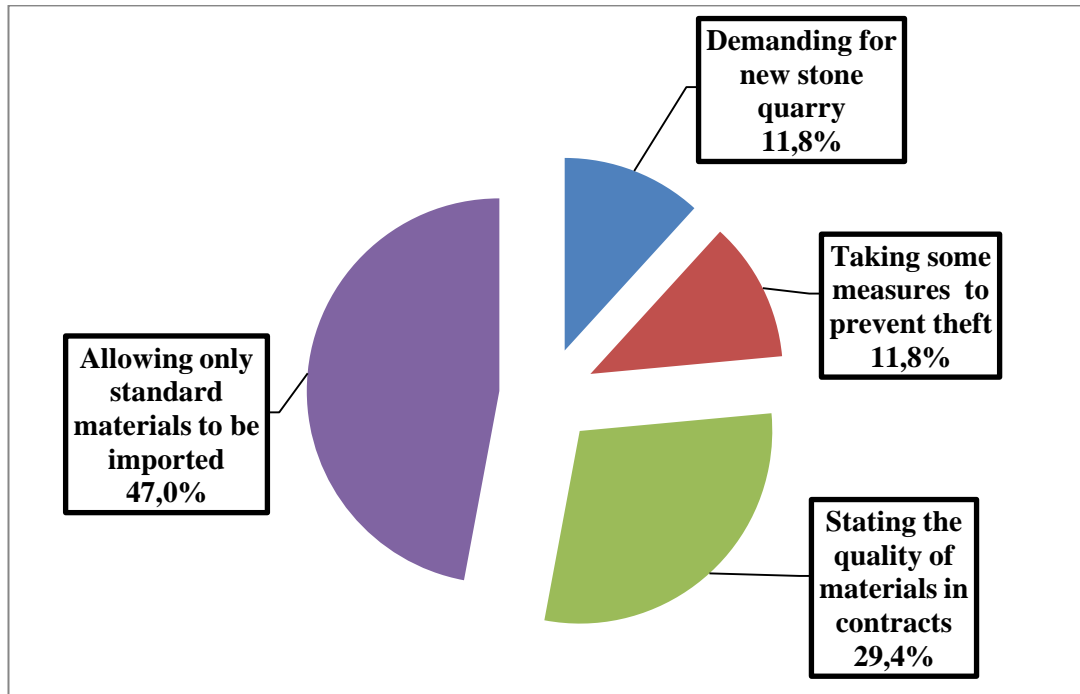


Figure 26: Suggestions of contractors to solve problems of materials

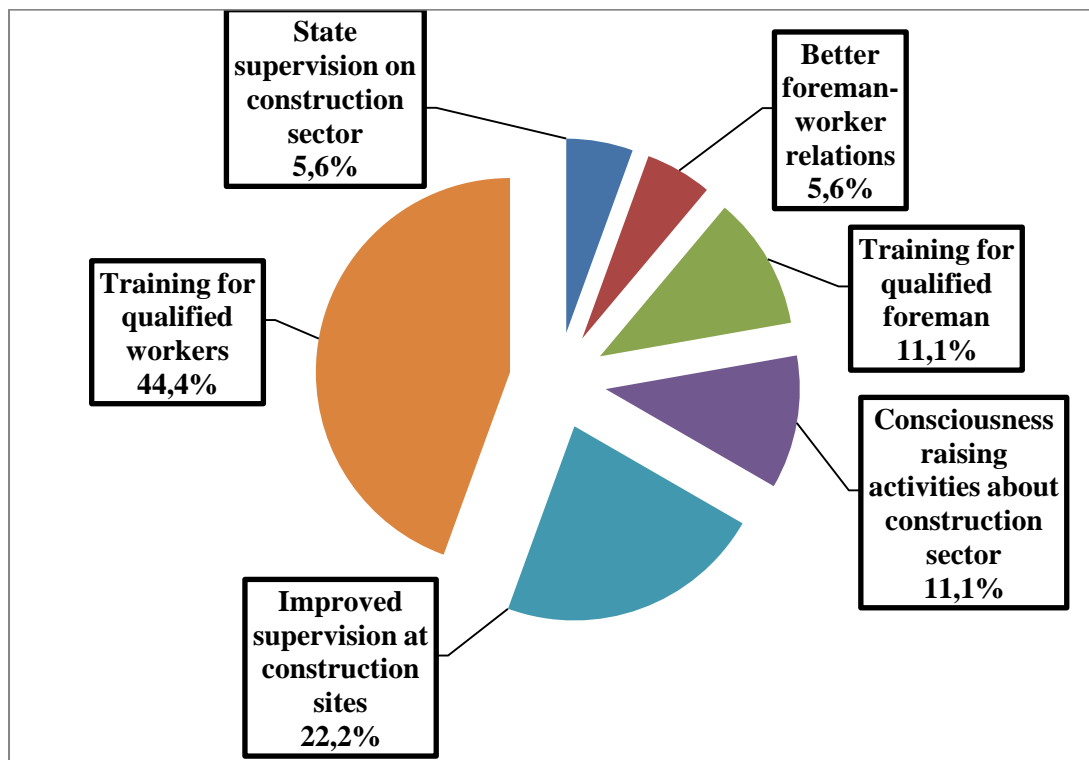


Figure 27: Suggestions of contractors to solve problems of workmanship

Figure 28 shows the suggestions made by contractors to solve the problems experienced with sub-contractors. It is highly suggested that contracts should be planned in detail with explicit and precise regulations and conditions.

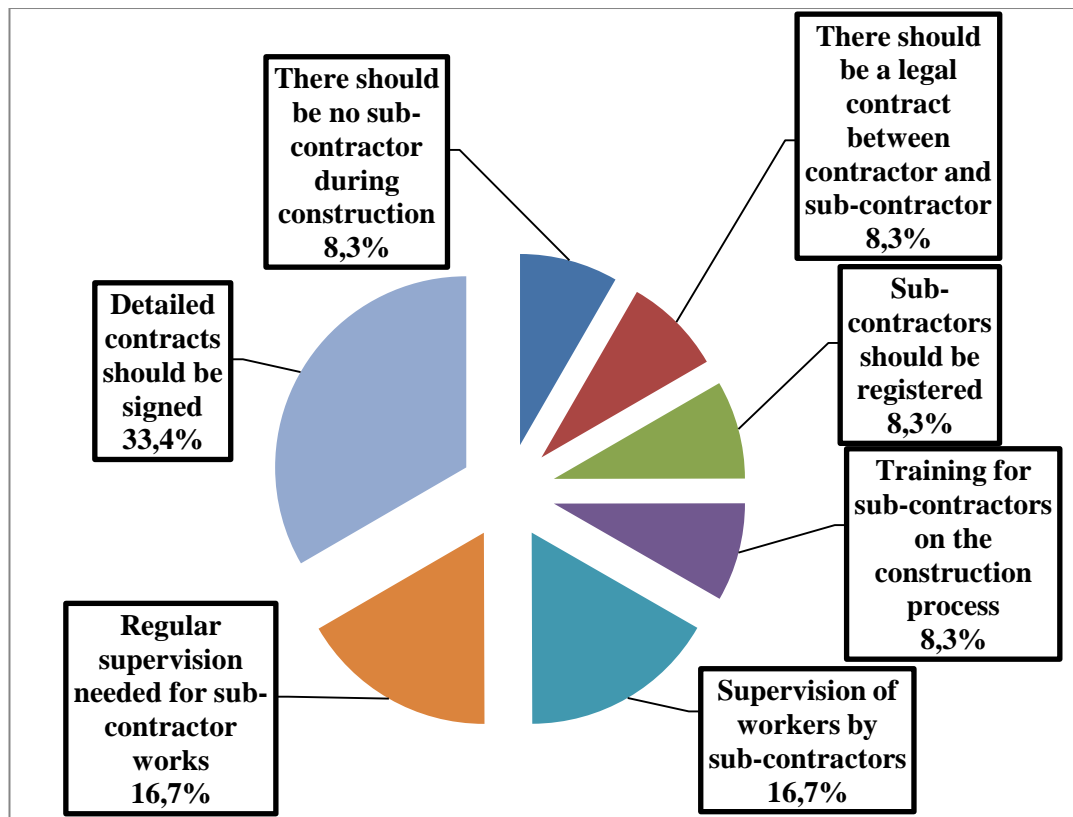


Figure 28: Suggestions of contractors to solve problems of sub-contractors

Figure 29 represents the suggestions to solve problems of construction site costs. Half of the suggestion involves the need for strict supervision of sites and the remaining half of the suggestions state that there should be a system that determines the amount of materials. Three suggestions were given in Figure 30. Most of the suggestions showed that each contract should adhere to the project thus not allowing any changes in the project.

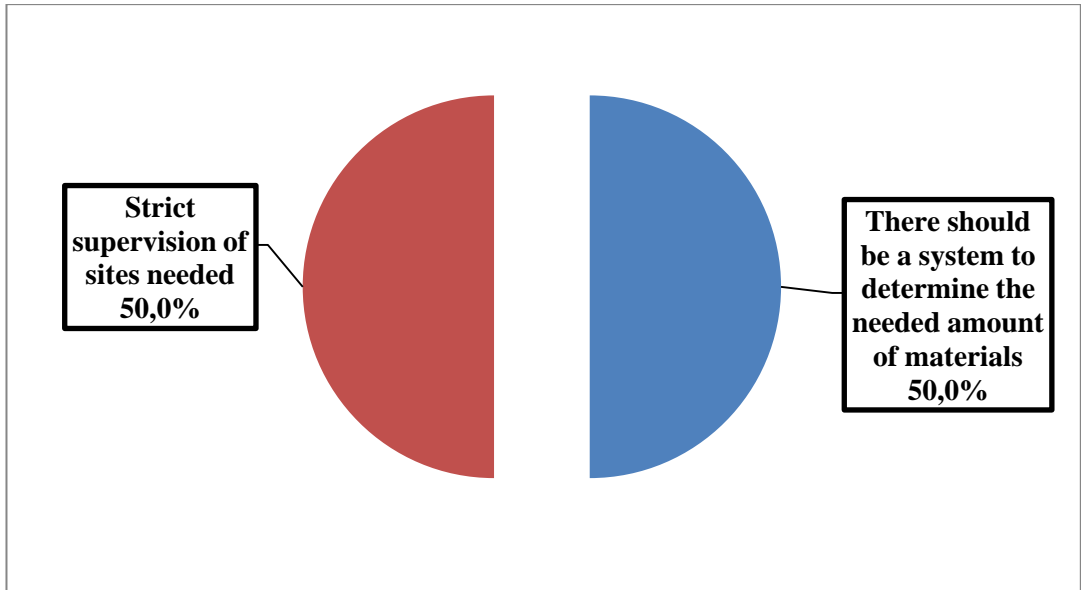


Figure 29: Suggestions of contractors to solve problems of construction site costs

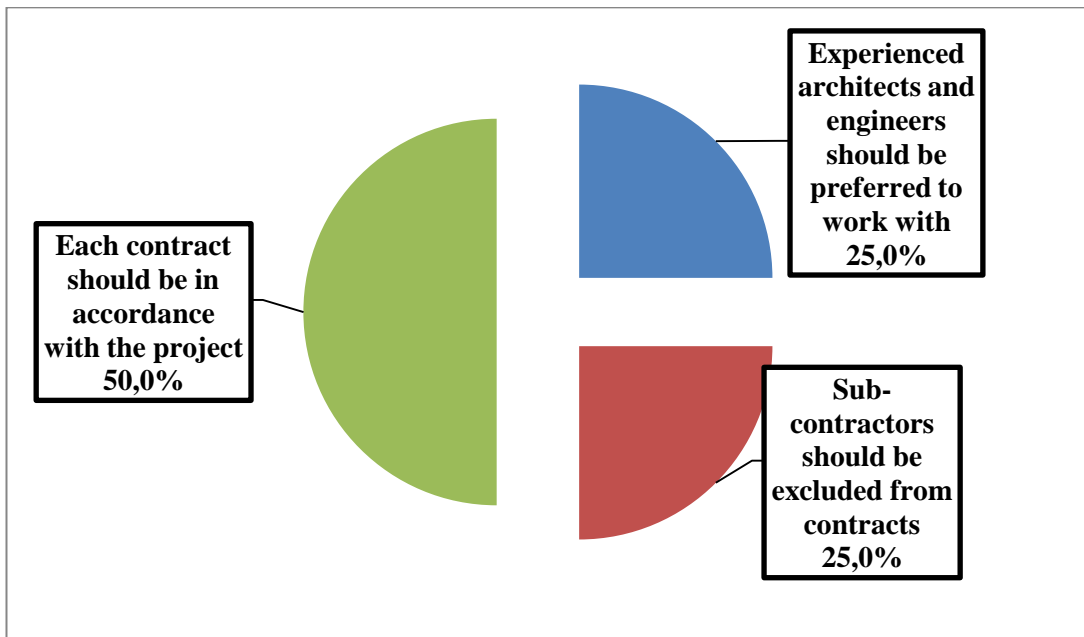


Figure 30: Suggestions of contractors to solve problems of project costs

Figure 31 shows the suggestions that could solve problems of general quality. The highest percentage of suggestions state that the number of the qualified workers should be increased to achieve a better quality. The suggestions of contractors to solve problems of timing can be seen in Figure 32. According to the majority, it is

suggested that contracts should include details about time limitations and money penalties for any delays.

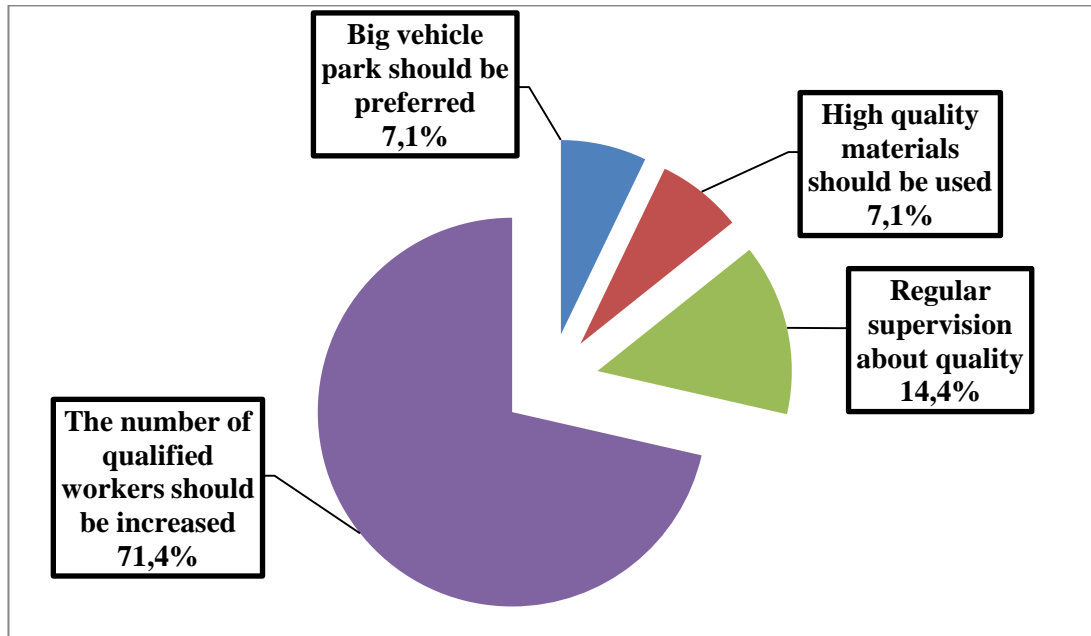


Figure 31: Suggestions of contractors to solve problems of general quality

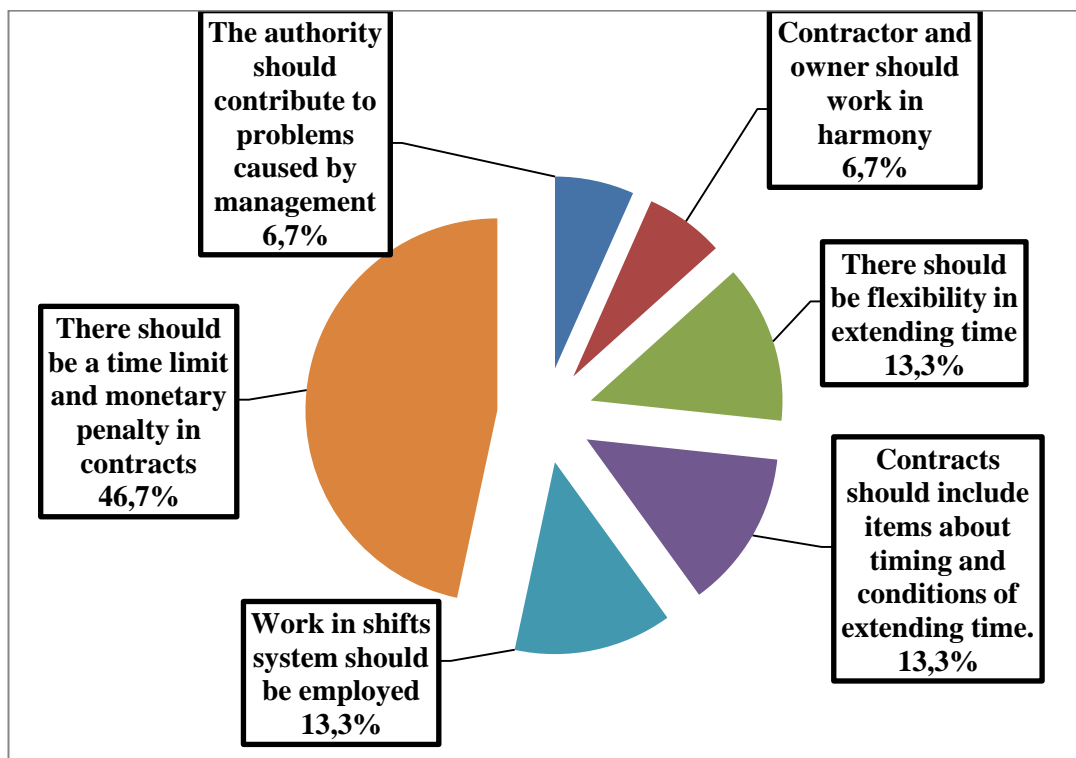


Figure 32: Suggestions of contractors to solve problems of timing

The suggestions given to solve problems of financial issues can be seen in Figure 33 and the larger percentage of these suggestions show that contracts should include all specific and explicit information of financial costs. Figure 34 shows only one suggestion that could solve the problems of occupational health and safety. It is recommended that an expert in this area is required in the construction site.

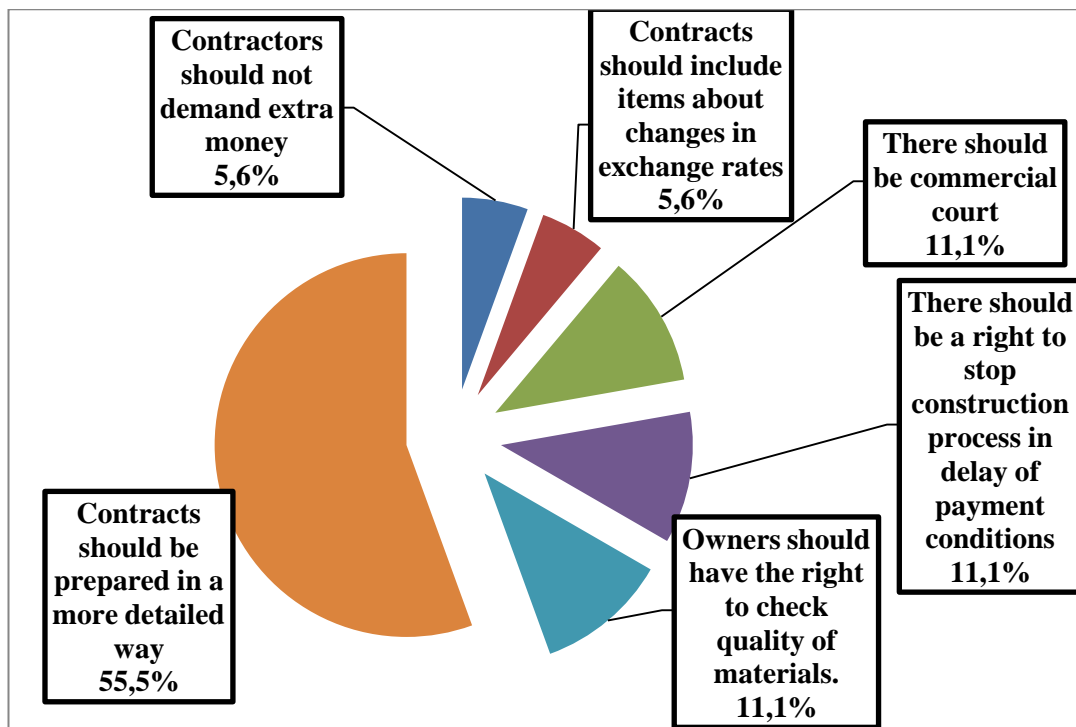


Figure 33: Suggestions of contractors to solve problems of financial issues

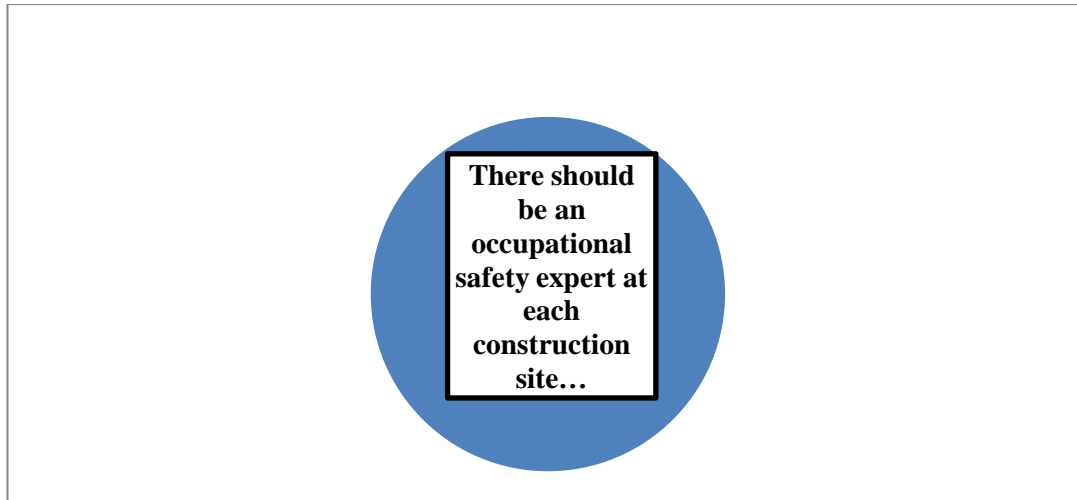


Figure 34: A suggestion of contractors to solve problems of occupational health and safety

6.3.1.4 Attitudes of Contractors towards Partnering System as a Solution of Different Problems in the Construction Sector

The attitudes of contractors towards each problem are illustrated in the following Figure 35. The average has been calculated according to the contractors who rated 5 or over out of 10 for each issue. The reason for this calculation is to identify those participants who perceive partnering type contract as a positive approach to solving problems. The scale ranges from 0 for 'definitely doesn't resolve the problem' to 10 for 'definitely resolves the problem'.

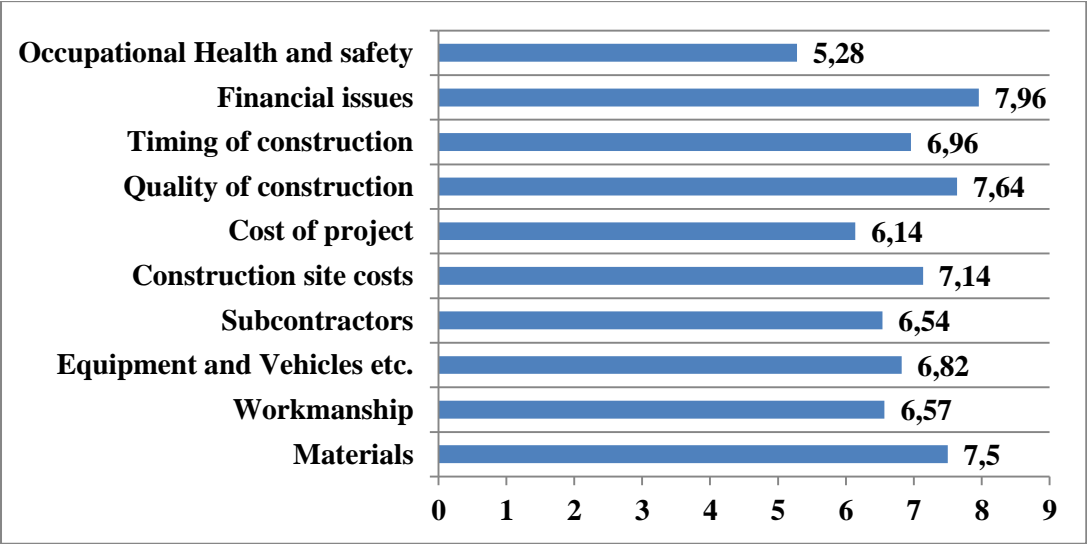


Figure 35: The average of the contractors' opinions on partnering contract as a solution to problems

6.3.2 Project Owners

Figure 36 shows the problems that were encountered during the project process in the last three years. In order to obtain the size of the problems, project owners stated the degree of each problem they faced with the contractors. The scale ranges from 1 referring to “no problem at all” to 10 referring to “a large problem”.

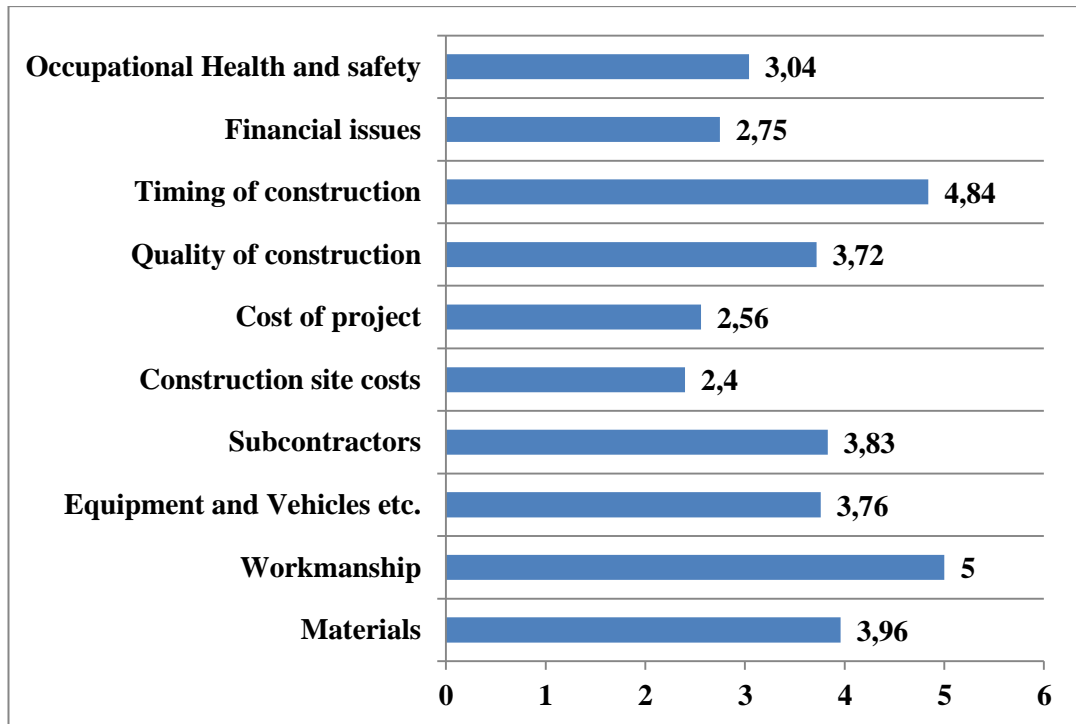


Figure 36: The average of the responses given out of 10 by project owners for problems encountered in the last three years

6.3.2.1 Problems Encountered by Project Owners during Project Process

This section presents separate figures and percentages that illustrate the responses given to each problem experienced by project owners with the contractors in the Northern Cyprus construction sector. Figure 37 shows the percentages of the problems of materials rated over 5/10 by 48% of the project owners and the majority of the problems comprised of the use of cheap materials which directly affects the quality of construction negatively. The reason why is because when the items are listed in the contract, the grade of materials are not specified.

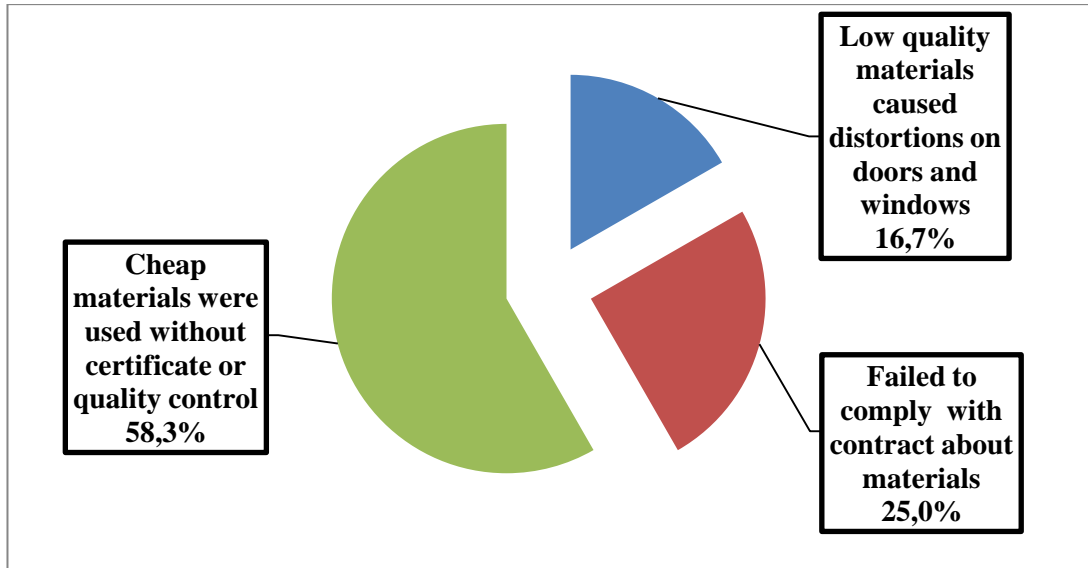


Figure 37: The percentages of the project owners' problems experienced with materials

Figure 38 shows the percentages of the problems of workmanship rated over 5/10 by 72% of the project owners and it can be clearly seen that 66.5% of problems are about the low quality work due to the lack of expertise in the areas worked in.

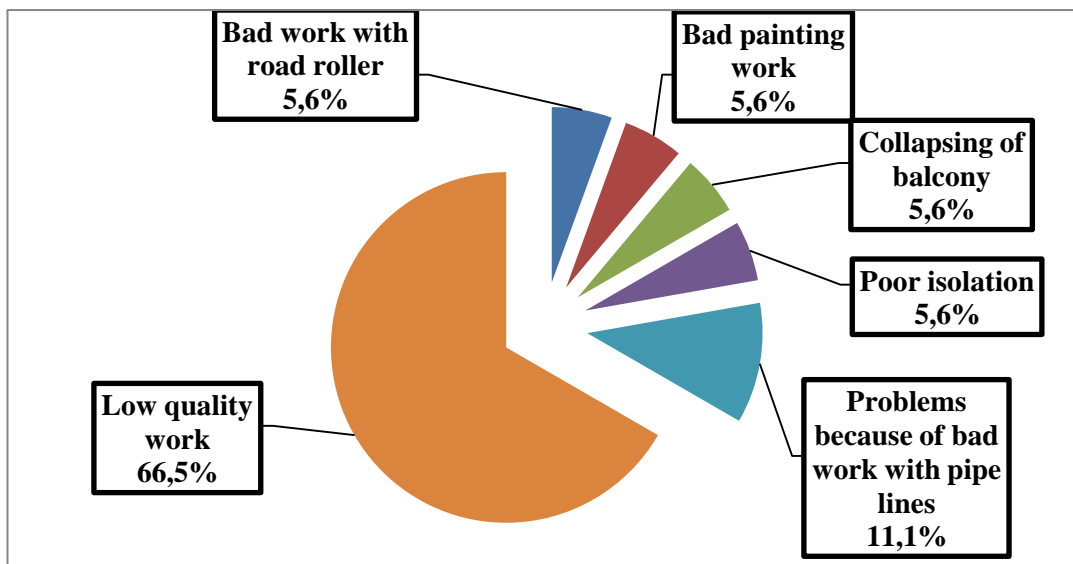


Figure 38: The percentages of the project owners' problems experienced with workmanship

Figure 39 represents the percentages of the problems of equipment and vehicles rated over 5/10 by 24% of the project owners. Half of the problems occur due to the lack of vehicles that are normally required in the construction process and the other half is about the inappropriate type of vehicles used to carry out the work. The reason for the lack of vehicles occurs from high rental prices or due to vehicles breaking down when services are not made regularly. Vehicles become inappropriate when the services are not made and it causes dangerous situations for workers.

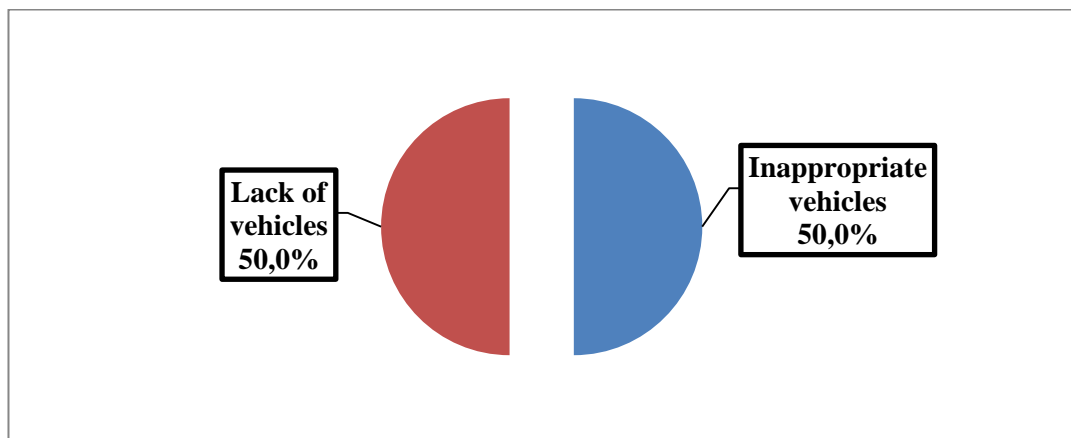


Figure 39: The percentages of the project owners' problems experienced with equipment and vehicles

Figure 40 shows the percentages of the problems of sub-contractors rated over 5/10 by 40 % of the project owners. The biggest problem points out that sub-contractors demand extra money for fallen plasters. Sub-contractors rush to complete the work they are assigned, therefore, the work generally has poor results. Thus, the sub-contractor repairs the work by asking project owners for additional payments.

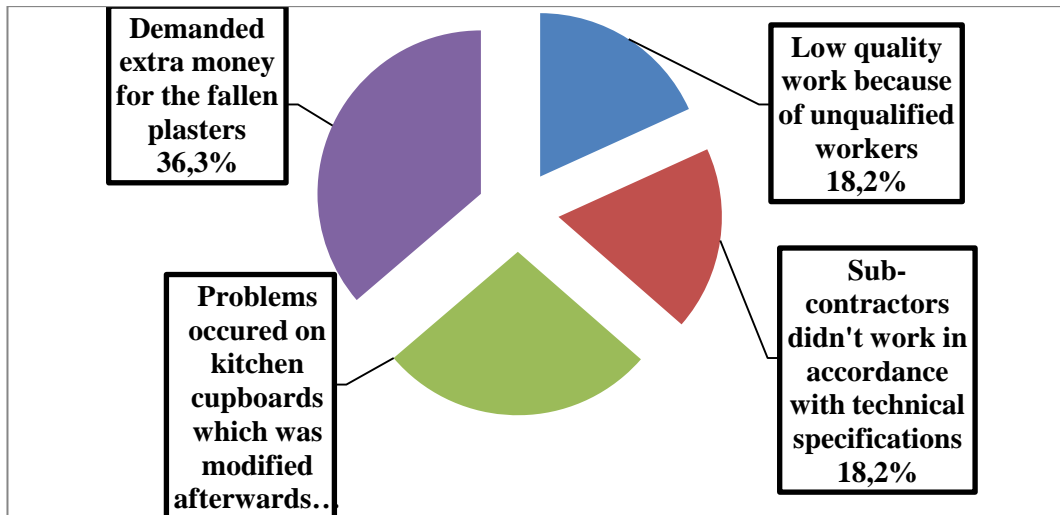


Figure 40: The percentages of the project owners' problems experienced with sub-contractors

Figure 41 shows the percentage of the problem of construction site costs rated over 5/10 by 12% of the project owners and it is obviously seen that the costs of construction sites are expensive. This is because gasoline vehicles have been used in place of electrical vehicles in the construction site, therefore a big amount of money has been spent on construction sites.

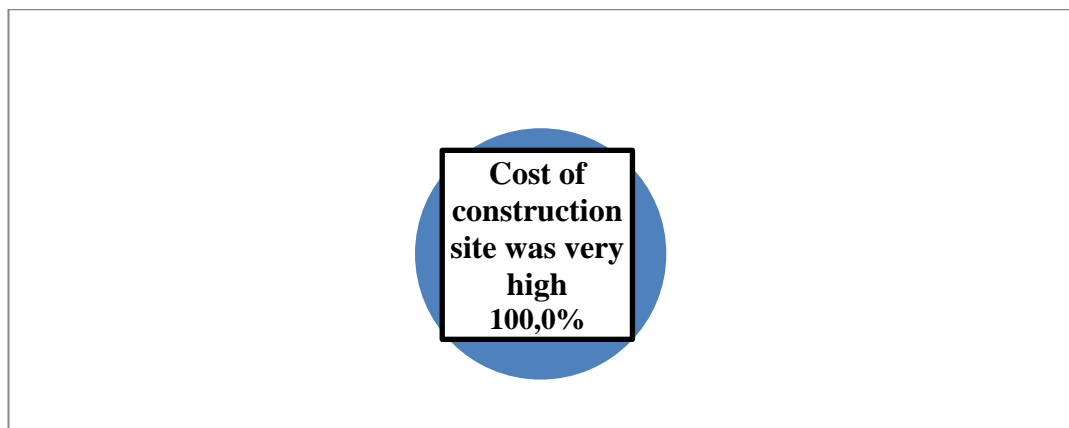


Figure 41: The percentage of project owners' problem experienced with construction site costs

Figure 42 shows the percentage of the problem of project costs rated over 5/10 by 4% of the project owners. The problem stated in this area was the huge cost of the

project. After a project was completed, any alterations that were made resulted in the demand for extra money by contractors.

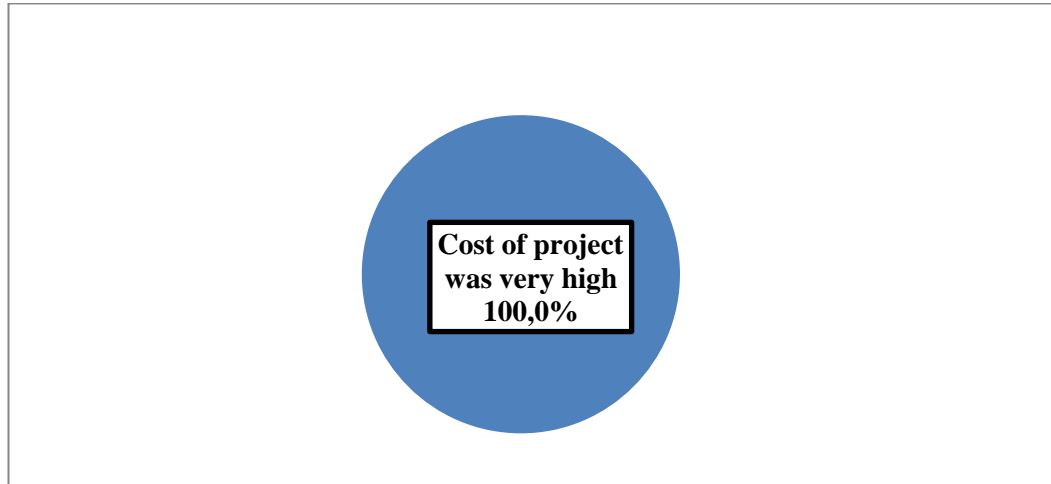


Figure 42: The percentage of the project owners' problem experienced with project costs

Figure 43 shows the percentages of the problems of general quality rated over 5/10 by 28% of the project owners. Three problems were put forward and the higher percentage indicated that low quality materials were used in construction. Contractors used low quality materials because the type or qualities of materials were not specified clearly in the contract.

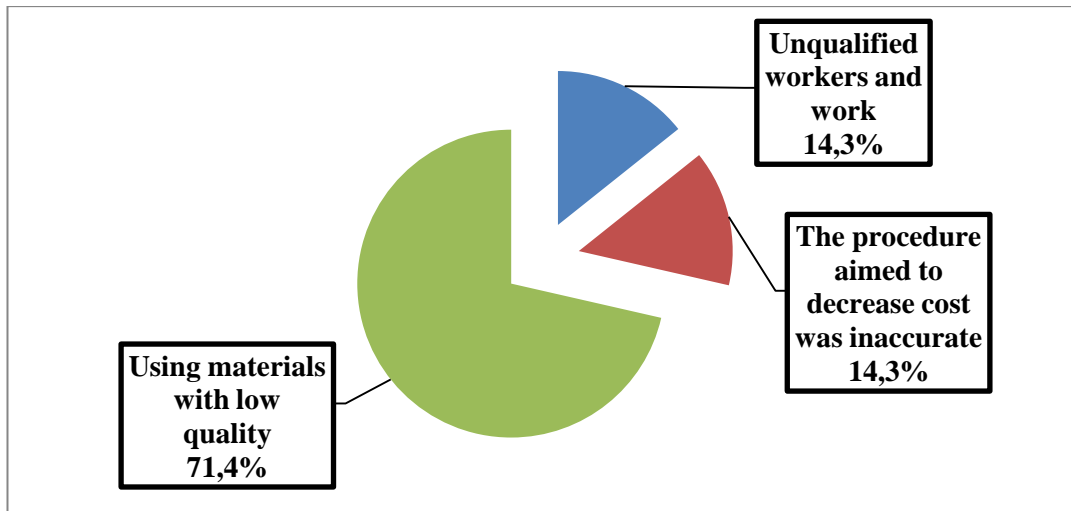


Figure 43: The percentages of the project owners' problems experienced with general quality

Figure 44 shows the percentages of the problems of timing rated over 5/10 by 56% of the project owners. It can be understood that the largest problem originated from the failure of contractors to comply with timing limitations in contract. Contractors are not supervised by the state; therefore, do not urge to complete the work in the stated time interval.

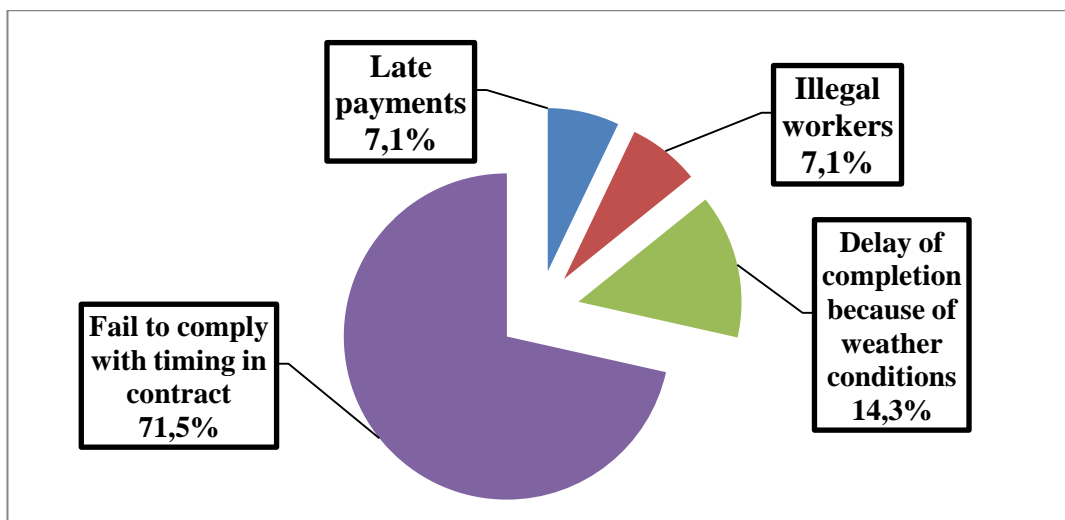


Figure 44: The percentages of the project owners' problems experienced with timing

Figure 45 shows the percentages of the problems of financial issues rated over 5/10 by 24% of the project owners. 83.7% of the problems highlight that conflicts occur as a result of additional cost demanded for extra work and 16.3% problems arise due to the incompleteness of work despite payments made on time.

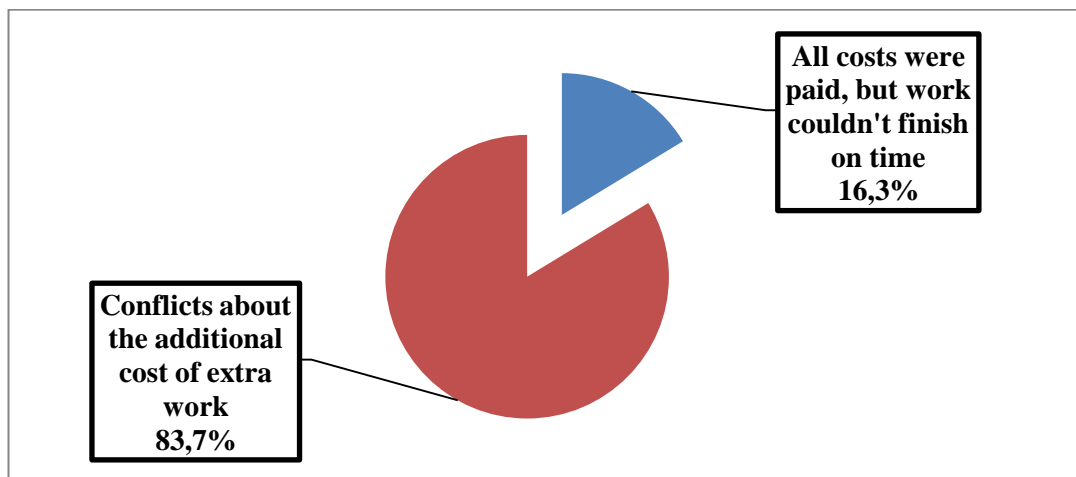


Figure 45: The percentages of the project owners' problems experienced with financial issues

Figure 46 represents the percentages of the problems of occupational health and safety rated over 5/10 by 20% of the project owners. The 20.0% of the problems show that there is a lack of information on safety and 80.0% emphasizes the necessity of an occupational safety expert in construction sites. This is because a lot of accidents have occurred as a result of low awareness of safety rules or not taking adequate measures in the construction site.

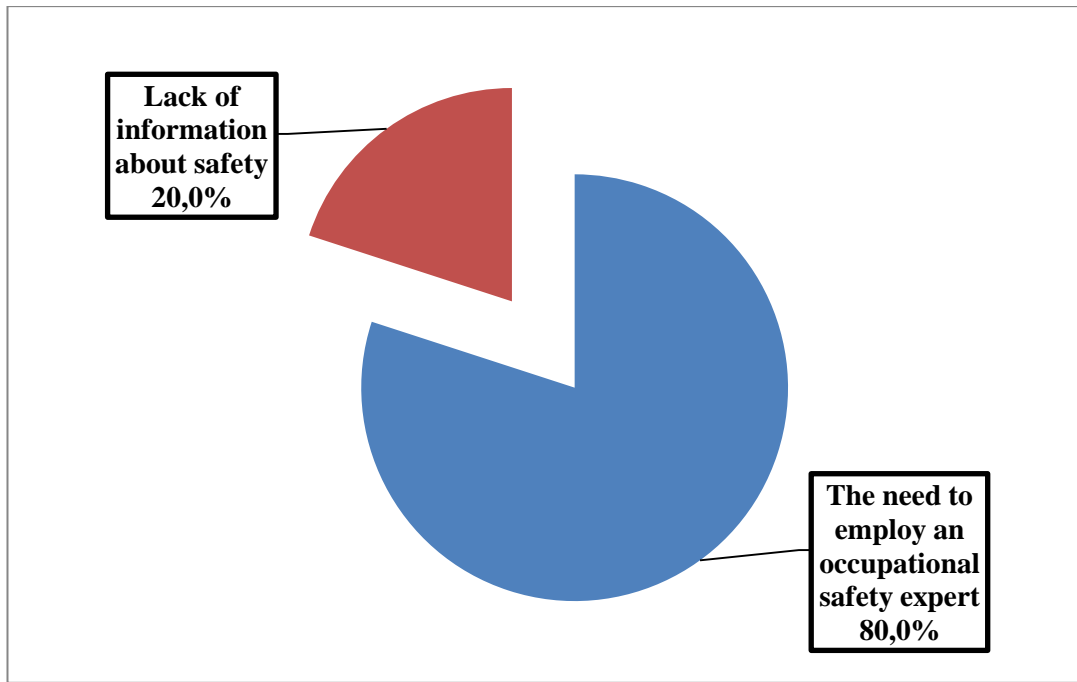


Figure 46: The percentages of the problems experienced with occupational health and safety

6.3.2.2 Actions Taken by Project Owners to Solve Problems

In this section, actions taken by project owners according to the problems specified in the previous section as well as their percentages are stated in separate figures. Figure 47 represents the actions taken to solve occurred problems of materials. The majority of the actions taken indicated that demands for standardized certificates of materials were made and complaints were made to the responsible firm of the purchased materials.

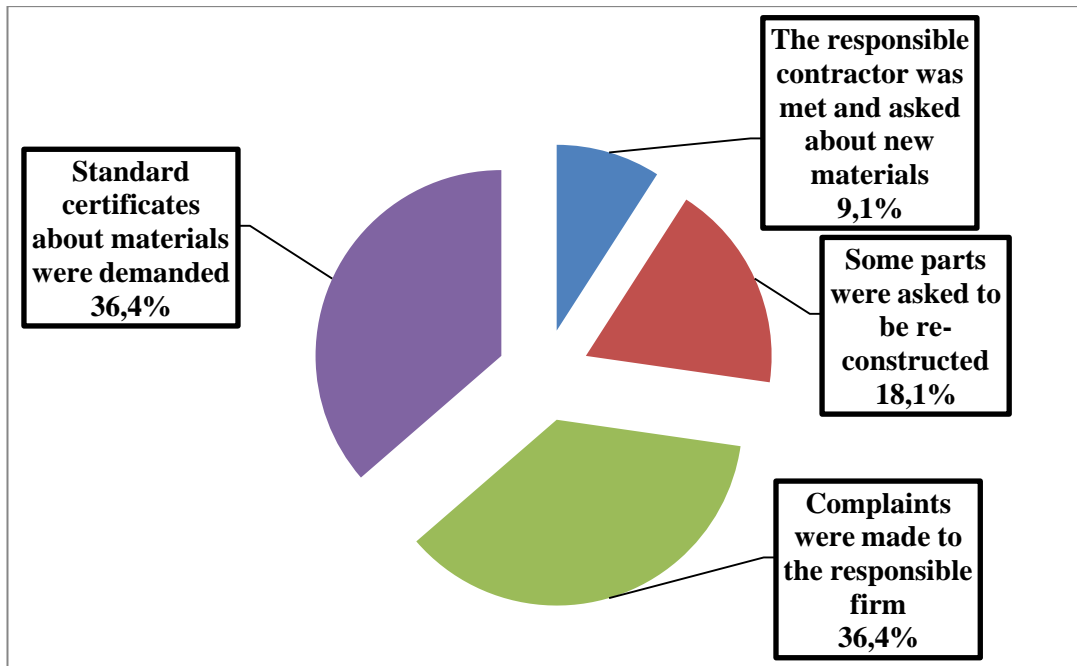


Figure 47: Project owner's actions to solve occurred problems of materials

Figure 48 shows the project owner's actions that were taken to solve problems with workmanship. It can be clearly seen that the biggest action taken was the negotiation to resolve problems with contractor.

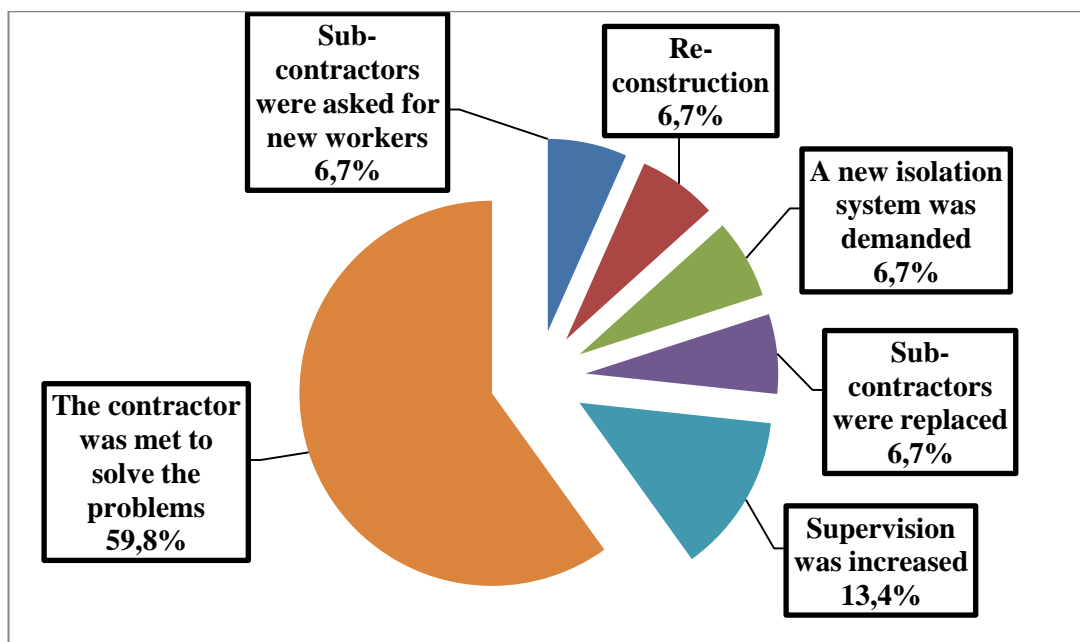


Figure 48: Project owner's actions to solve occurred problems of workmanship

Figure 49 shows the actions that were taken to solve problems with sub-contractors. 28.6% replaced the sub-contractor and 71.4% negotiated with contractors to solve the problems.

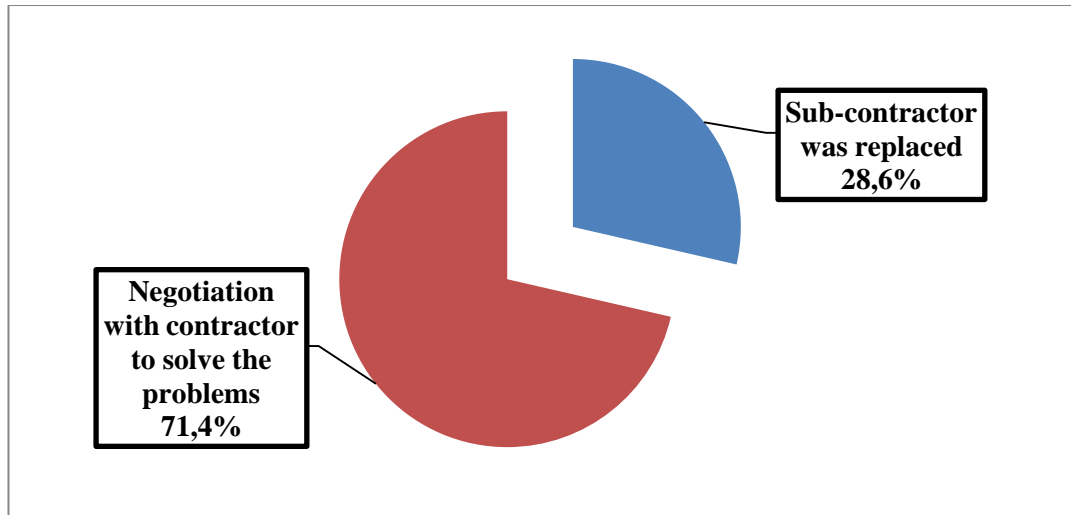


Figure 49: Project owner's actions to solve occurred problems of sub-contractor

Figure 50 represents the actions taken to solve problems on the quality of work. It can be clearly seen that the majority signed an extra guarantee paper for material quality.

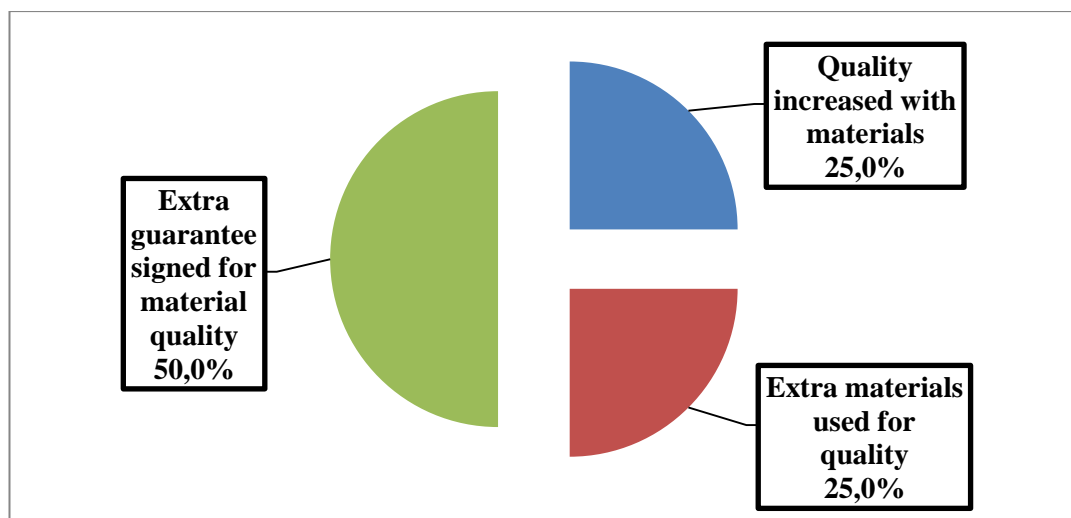


Figure 50: Project owner's actions to solve occurred problems of the quality of work

Figure 51 shows the actions that were taken to solve problems with timing by and it is obviously seen that 60.0 percent demanded extra work from contractors in place of monetary penalties for exceeding the time in the contract.

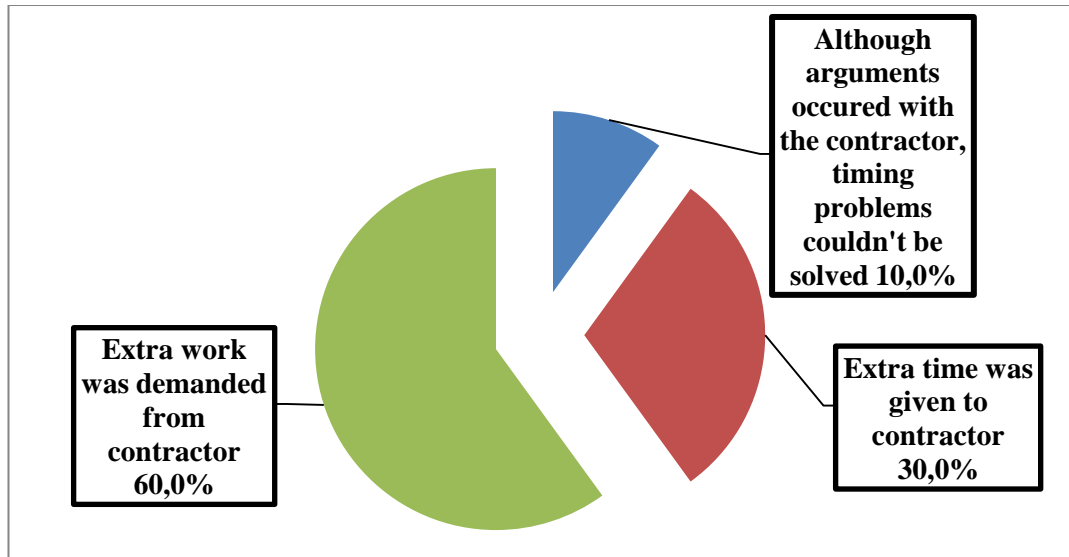


Figure 51: Project owner's actions to solve occurred problems of timing

Figure 52 illustrates actions taken to solve problems on financial issue. According to the responses of project owners, 50.0% pointed out that monetary problems were solved by applying to court.

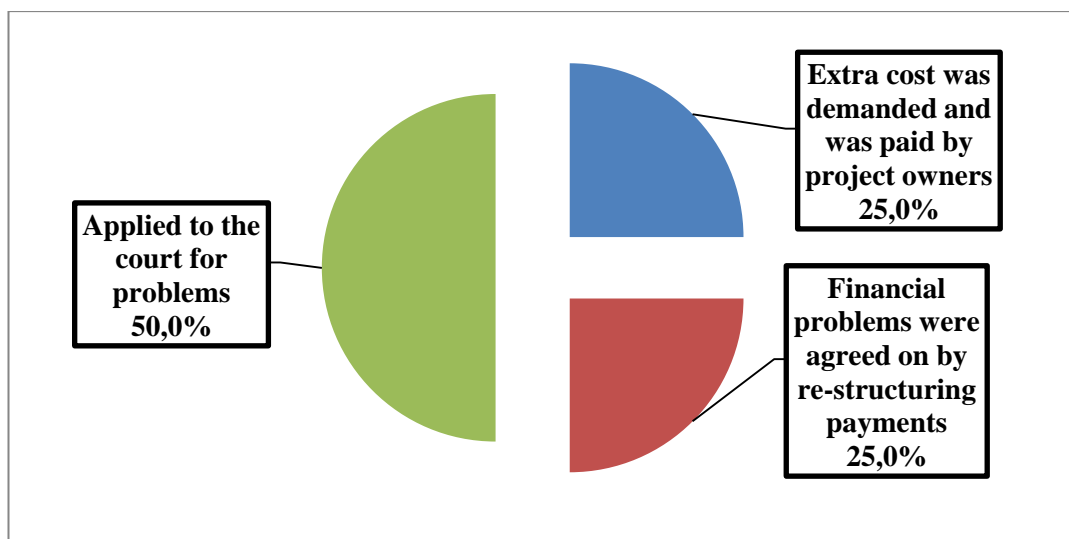


Figure 52: Project owner's actions to solve occurred problems of financial issues

6.3.2.3 Problems Solved and Unsolved with Owners' Initiatives

The Figure 53 represents the degree the problems were solved or unsolved in percentages according to the actions taken and the attitudes project owners had towards problems.

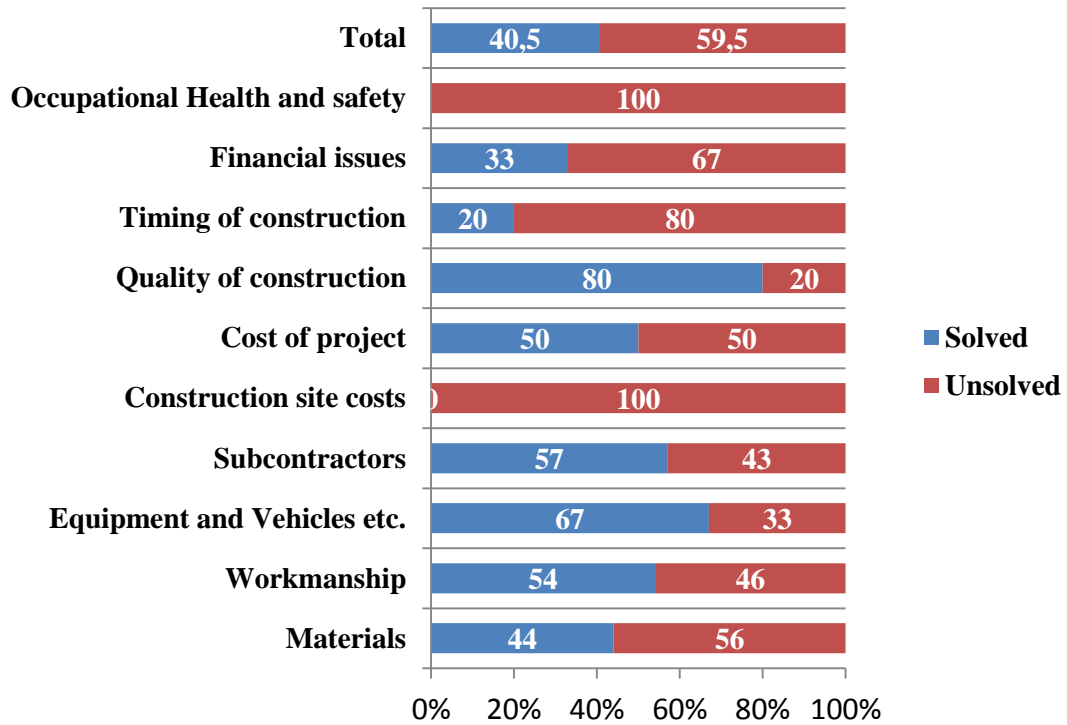


Figure 53: The averages of solved and unsolved problems

6.3.2.4 Suggestions of Project Owners to Solve Problems

This section shows separate figures for suggestions made by project owners to avoid problems with contractors in different areas. Figure 54 shows the suggestions proposed to solve problems with materials and it is highly suggested that only standard materials should be given permission for import. Moreover, it is suggested that separate contracts on the quality of materials should be prepared and signed by both parties.

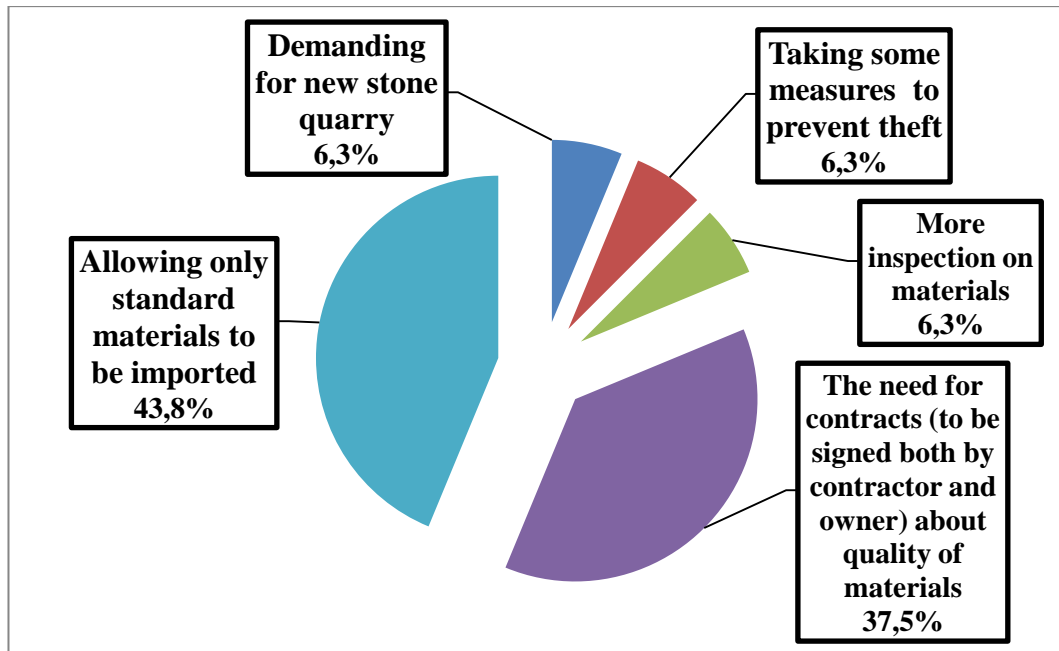


Figure 54: Suggestions of project owners to solve problems of materials

Figure 55 presents the suggestions that could solve problems of workmanship. Half suggested that training should become compulsory in order to enhance qualified workers.

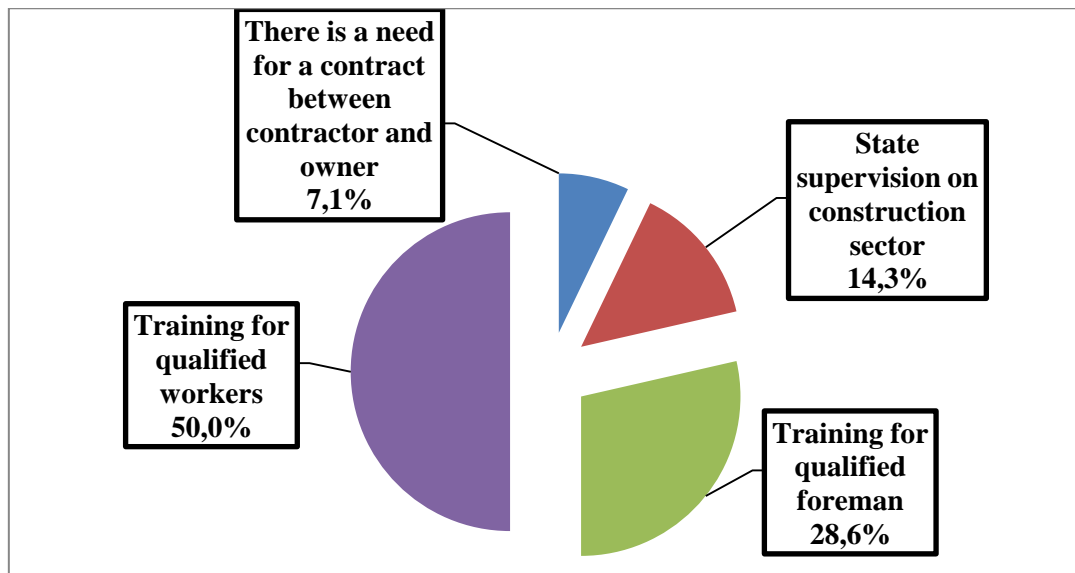


Figure 55: Suggestions of project owners to solve problems of workmanship

Figure 56 shows one suggestion given to solve problems of equipment and vehicles. Project owners suggested that all equipment should be provided by contractors in order to gain time and decrease the number of mistakes in the construction site.

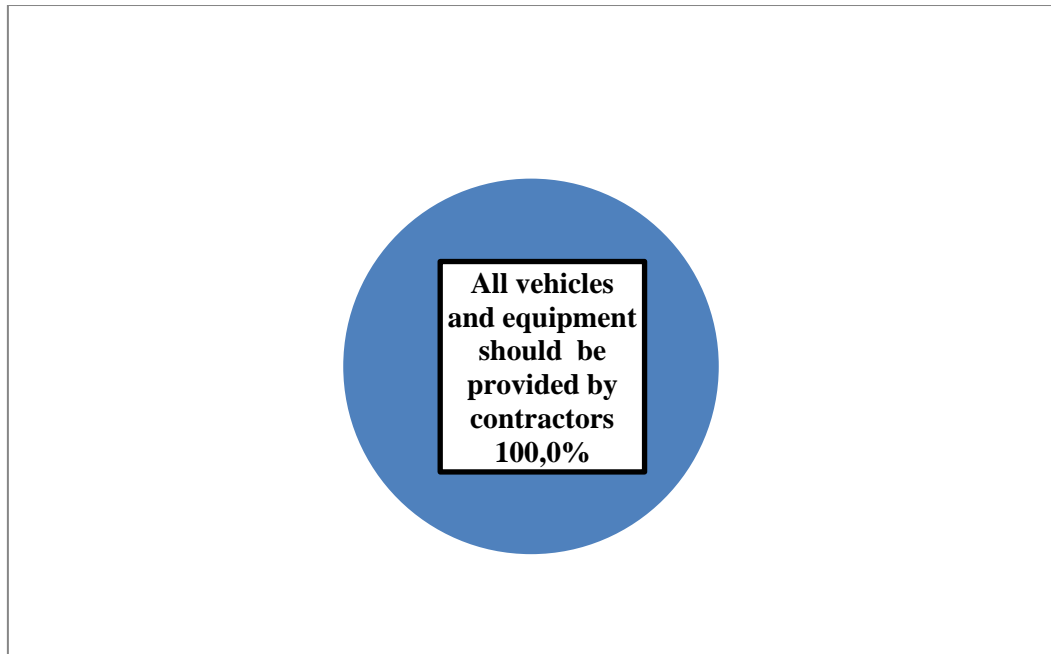


Figure 56: A suggestion of project owners to solve problems of equipment and vehicles

Figure 57 shows various suggestions which could solve problems of sub-contractors. The majority suggested that detailed contracts should be signed between contractors and sub-contractors.

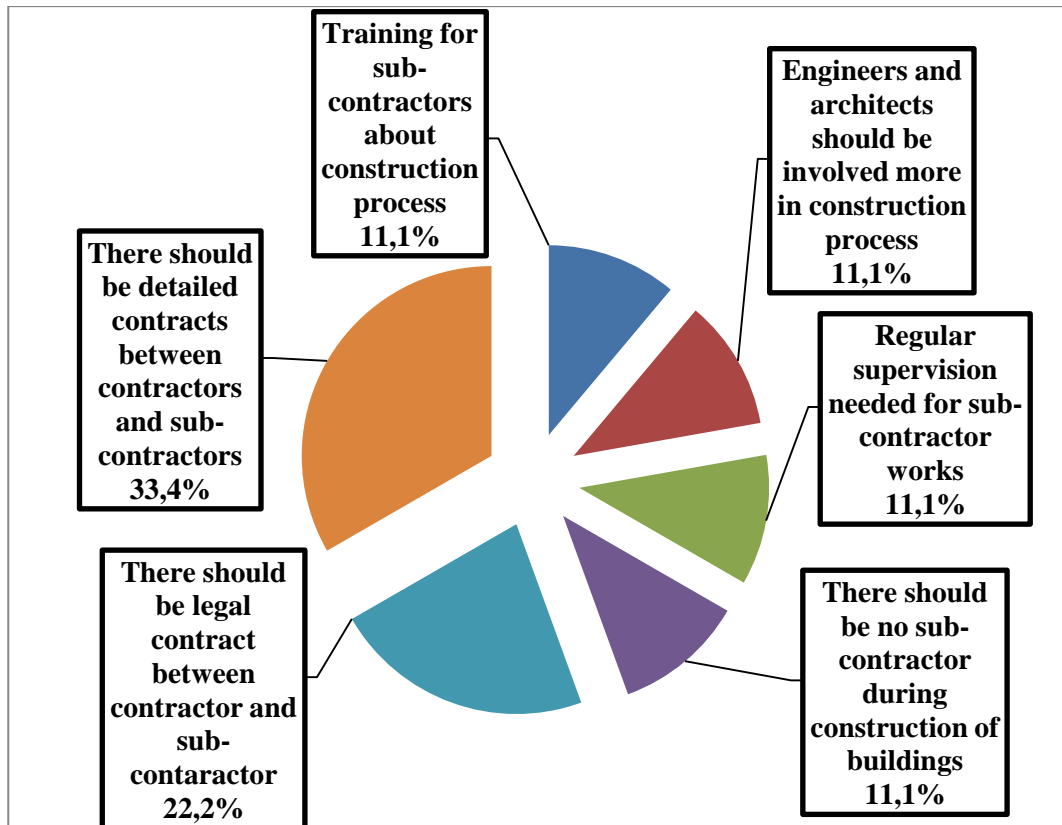


Figure 57: Suggestions of project owners to solve problems of sub-contractors

Figure 58 represents the suggestions that could solve problems of project costs. 66.7% of the given suggestions were again based on the preparation of detailed contracts for every separate project. 33.3% of the suggestions stated that extra charges should not be made for the changes in the project.

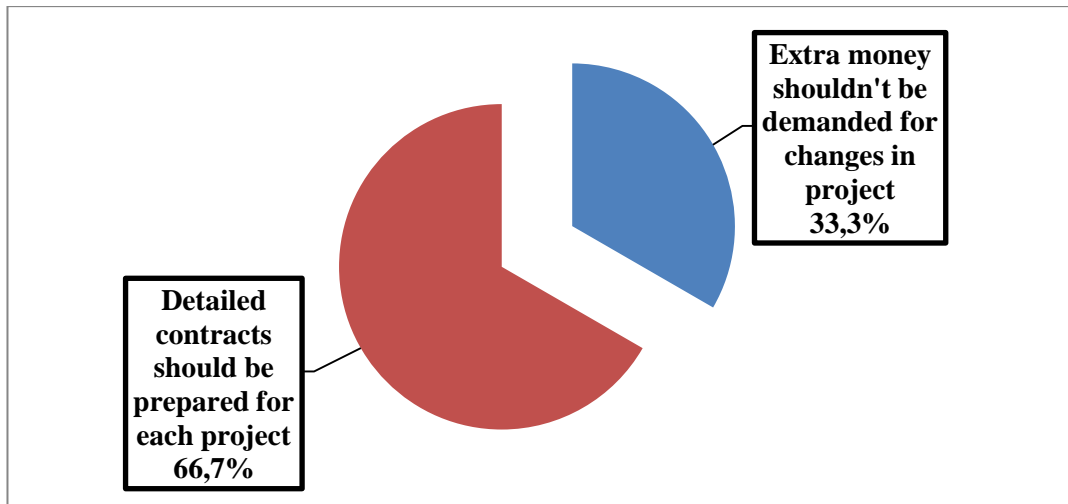


Figure 58: Suggestions of project owners to solve problems of project costs

Figure 59 shows the suggestions made to solve problems of construction quality. It can be seen from the figure that the majority suggested that the number of qualified workers should be increased.

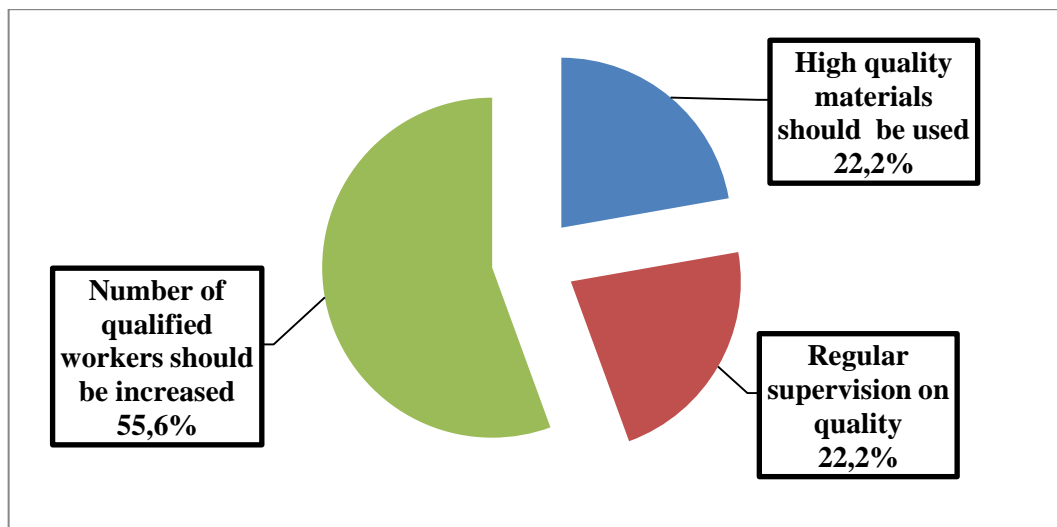


Figure 59: Suggestions of project owners to solve problems of construction quality

Figure 60 shows the suggestions that could solve problems of timing. It is highly suggested that contracts should include detailed information and timing policies.

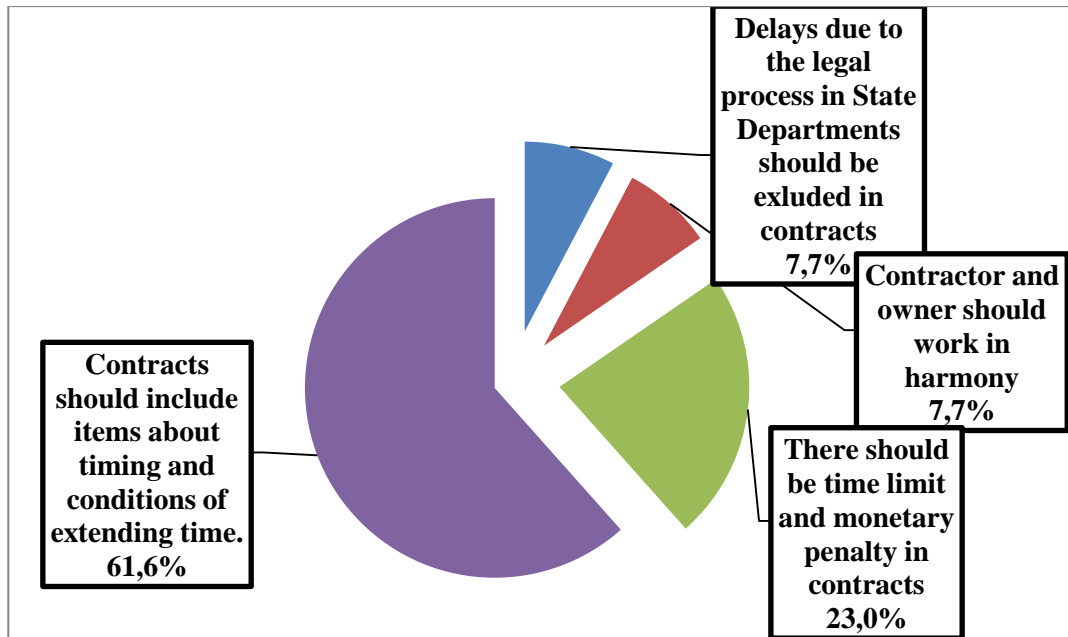


Figure 60: Suggestions of project owners to solve problems of timing

Figure 61 shows the suggestions that were made to solve problems of financial issues. 89.0% of the suggestions made by project owners emphasized the need for more detailed contracts.

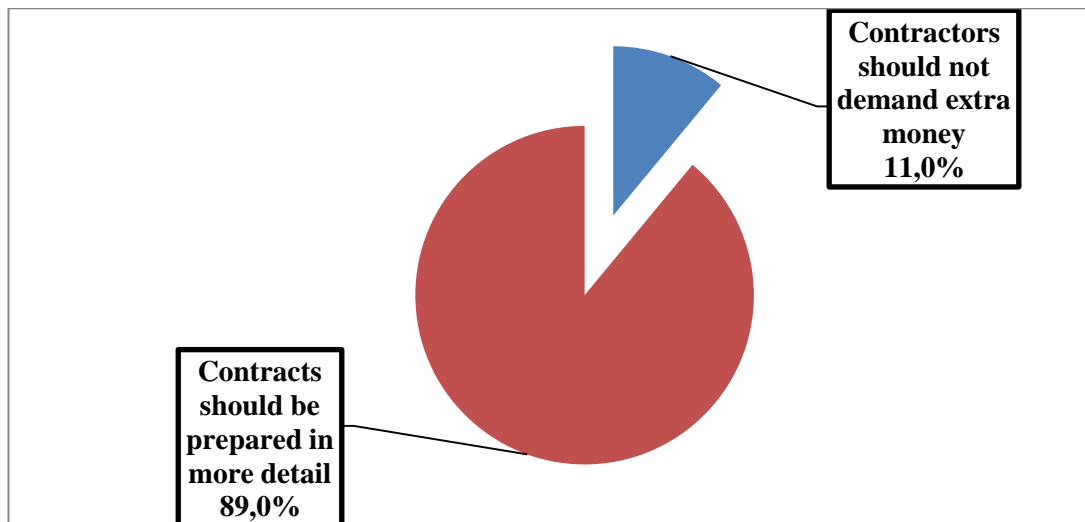


Figure 61: Suggestions of project owners to solve problems of financial issues

Figure 62 presents the suggestions that could solve problems of occupational health and safety. A large proportion suggested that an occupational safety expert is essential in construction sites.

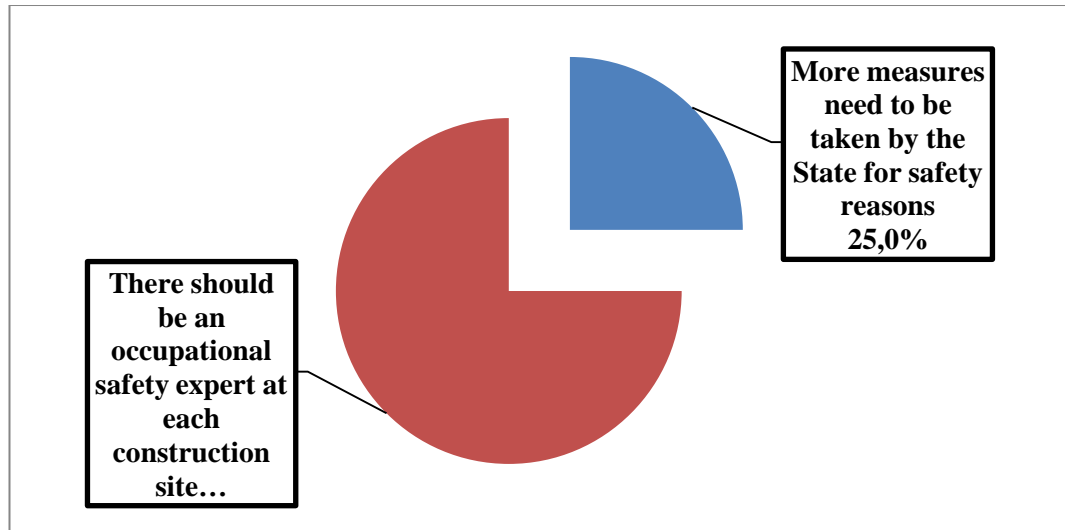


Figure 62: Suggestions of project owners to solve problems of occupational health and safety

6.3.2.5 Attitudes of Project Owners towards Partnering System as a Solution of Different Problems in the Construction Sector-Owners

Figure 63 shows the average of the project owners' opinions on partnering contract as a solution to problems. The average has been calculated according to the project owners who rated 5 or over out of 10 for each issue. The reason for this calculation is to identify those participants who perceive partnering type contract as a positive approach to solving problems. The scale ranges from 0 for 'definitely doesn't resolve the problem' to 10 for 'definitely resolves the problem'.

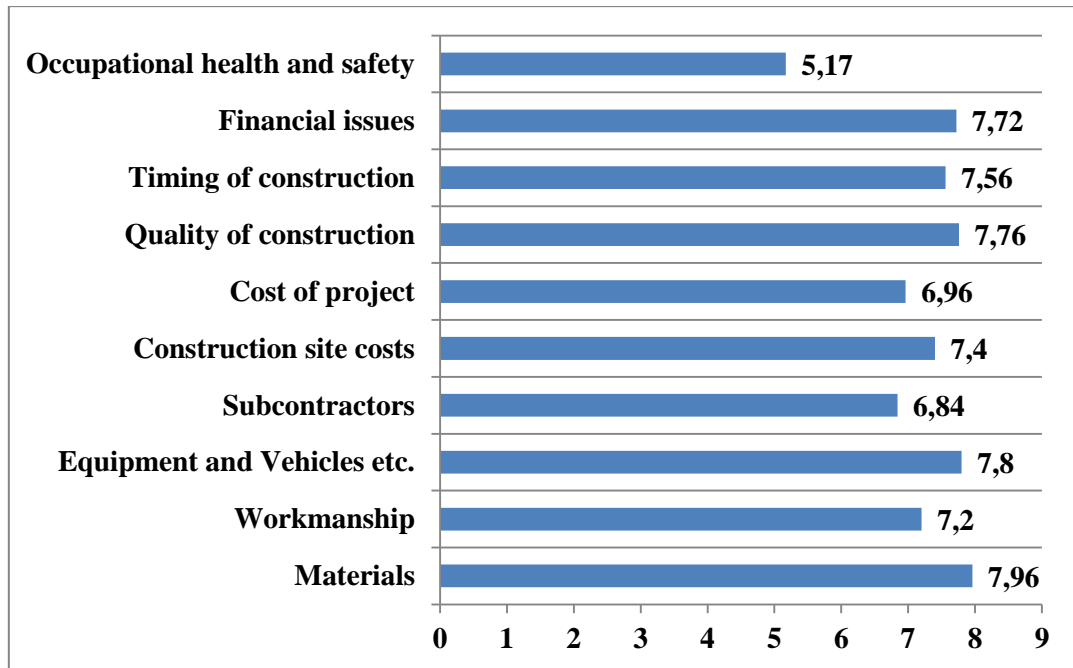


Figure 63: The average of the project owners' opinions on partnering contract as a solution to problems

6.4 Results and Discussion

This section summarizes and discusses experienced problems, the average percentage of the participants and the viewpoints of contractors and project owners about partnering system. At the same time, all of the problems confronted as well as the suggestions made to provide a beneficial partnering system by contractors and project owners are summarized and interpreted in separate tables.

6.4.1 Problems Encountered During Construction Process

Figure 6 shows the opinions of respondents on the topics perceived to be responsible for the problems during project processes in the Northern Cyprus construction industry.

It can be seen from Figure 64 that the most important problem for contractors are monetary issues (6,21/10), followed by the relations with sub-contractors (5,36/10) and the low quality of workmanship (3,93/10). On the other hand, project owners had different experiences in terms of the hierarchy of problems. The most important

problem for them are the low quality of workers' work (5/10), followed by the timing of construction (4,84/10) and the quality of materials used (3,96/10). According to these results, it can be seen that both sides perceive a common problem: the low quality of workmanship. As a significant issue for contractors and project owners, the reasons underlying this matter may have arisen from the lack of experienced or qualified workers, or the recruitment of cheap workers to reduce cost. It is suggested that each worker should own a qualification in their own field and should only be assigned tasks in their own specific areas.

In terms of the contractor participants' responses, it can be viewed that there is a huge problem in financial issues. These problems include additional work demanded by project owners without any payments made and the constantly changing exchange rate which leads to late payments. Moreover, contractors face several problems with sub-contractors such as not completing the necessary requirements on time as stated in the contract, or leaving the construction site in a mess after the completion of their work.

As a result of the project owners' responses, timing has been considered as one of the biggest problems in construction. For instance, contractors not complying with the timing stated in the contract or a delay in delivery of construction due to weather conditions.

It can also be seen from figure 64 that there is a discrepancy between financial issues experienced by project owners (2,75/10) and contractors (6,21/10). Because project owners finance to the contractors for construction, contracts are dependent on project owners. Therefore, the side that always loses in a minor disagreement situation are

contractors. Another discrepancy occurred between subcontractor problems of project owners and contractors. Because contractors communicate with subcontractors more than project owners, it is more likely they experience frequent problems with them.

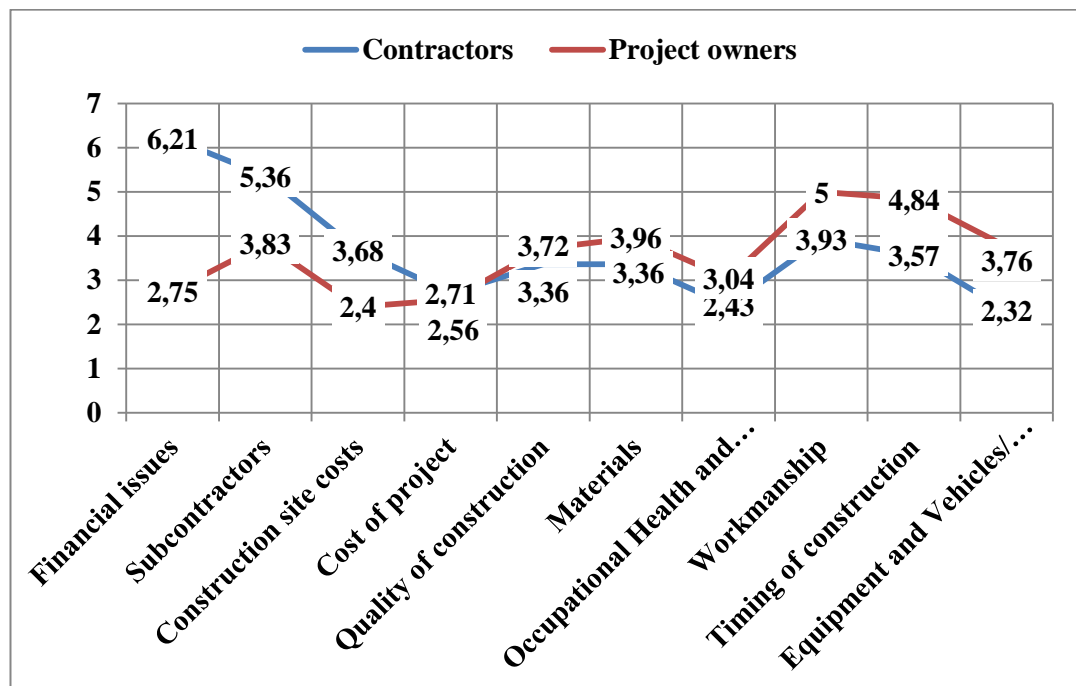


Figure 64: Experienced problems by all contractors and project owners

On further analyses of the results shown in Table 10, it is immediately apparent that there are differences in the proportions of experienced problems by contractors and Project owners who have ranked problems over 5 out of 10. 61% of these contractors had problems in financial issues and 24% of owners had similar financial issues. Furthermore, 72% of the owners complained about the quality of workers during the construction process which is also a problem for 39% of the contractors. Thus, contractors explained that they were worried about this situation. A great majority of contractors (79%) had problems with sub-contractors. However, only 40% of Project owners mentioned this problem.

Table 9: Proportions of participants who had problems in different areas

Topics	% of firms have problems	
	Contractors	Project owners
Materials	39%	48%
Workmanship	39%	72%
Equipment and Vehicles	7%	24%
Sub-contractors	79%	40%
Construction site costs	21%	12%
Project costs	21%	4%
General quality	29%	28%
Timing	43%	56%
Financial issues	61%	24%
Occupational Health and safety	7%	20%

6.4.2 Actions Taken by Parties to Solve Problems

Both contractors and project owners developed some strategies to solve the problems they encountered during the construction process. Table 11 is an illustration of the list of strategies applied by contractors and project owners in a comparable manner. The table aims to point out the actions which overlap or are similar to one another.

Table 10: Contractors' and project owners' actions to solve experienced problems

	Contractors	Project owners
Materials	<ul style="list-style-type: none"> → Materials were imported directly. → Existing materials were changed with new ones → Items about materials were added to contract → The project owner was informed about quality of materials → Buildings were re-constructed. <p>Extra cost was demanded from project owner</p>	<ul style="list-style-type: none"> → The responsible contractor was met and asked about new materials → The re-construction of some parts was demanded → Complaints were made to the responsible firm → A standard certificate about materials was demanded
Workmanship	<ul style="list-style-type: none"> → New workers were demanded from sub-contractor → Payments were done in arrears to sub-contractor → New team was created with new workers → Supervision was increased → Monetary penalty was given due to the delay originated from bad work <p>Sub-contractor was replaced</p>	<ul style="list-style-type: none"> → New workers were demanded from sub-contractor → Re-construction was demanded → New isolation system was demanded → Sub-contractor was replaced → Supervision was increased <p>The contractor was met to solve the problems</p>
Equipment and Vehicles	NO INITIATIVE	NO INITIATIVE
Sub-contractors	<ul style="list-style-type: none"> → Sub-contractor's earning was deducted → Sub-contractor was warned → Sub-contractors were replaced directly 	<ul style="list-style-type: none"> → Sub-contractor was replaced → Negotiation was done with contractor to solve the problems
Construction site costs	<ul style="list-style-type: none"> → Petrol engines were replaced by diesel engines in order to decrease cost 	NO INITIATIVE

Project costs	<ul style="list-style-type: none"> → Extra payment was received for new demands → Negotiation was done with owner, but could not solve the problem → Work was slowed down and payment was demanded 	NO INITIATIVE
General quality	<ul style="list-style-type: none"> → Sub-contractor was replaced → New materials were imported directly → Supervision was increased → Level of quality of materials was increased 	<ul style="list-style-type: none"> → Quality was increased with materials → Extra materials were used for quality → Extra guarantee was signed with contractor for material quality
Timing	<ul style="list-style-type: none"> → Failure to comply with timing → Extra time was given to sub-contractor → Extra work was done to satisfy owner 	<ul style="list-style-type: none"> → Conflicts occurred with contractor, but the timing problem could not be solved → Extra time was given to contractor → Extra work was demanded from contractor
Financial issues	<ul style="list-style-type: none"> → Applied to the court for problems → Extra cost was demanded and received before the work finished 	<ul style="list-style-type: none"> → Extra cost demanded and we paid → Agreement on financial problems by re-structuring payments → Applied to the court for problems
Occupational Health and safety	NO INITIATIVE	NO INITIATIVE

It can be observed from Table 11 that there are several common actions which both sides have taken to solve the problems they have experienced in the process of construction. A common action taken by both parties includes applying to the court when the problem could not be solved mutually. For instance, the contractor litigated when the owner did not pay the rest of the money after the completion and delivery of construction. In the case of a project owner, which was vice versa, the money was paid to the contractor but the construction was not finalized, therefore the project owner applied to the court. Another common action which can be seen from Table 11 is the demand of new workers from sub-contractors. Because of the lack of workers which caused a delay in the project and the unqualified workers, the expectations of both contractors and owners were not met; therefore new workers were demanded from sub-contractors. In addition to these common actions, workers were supervised more regularly and frequently, areas in the building with poor quality were reconstructed, the sub-contractor was replaced due to the delay of work and negligence. Moreover, both sides negotiated with one another on the subject of sub-contractors. On one hand, contractors were able to solve this issue, whereas on the other, owners' problems were left unsolved.

6.4.3 Viewpoints of Contractors and Project Owners about Partnering Type Contract as a Solution to Experienced Problems

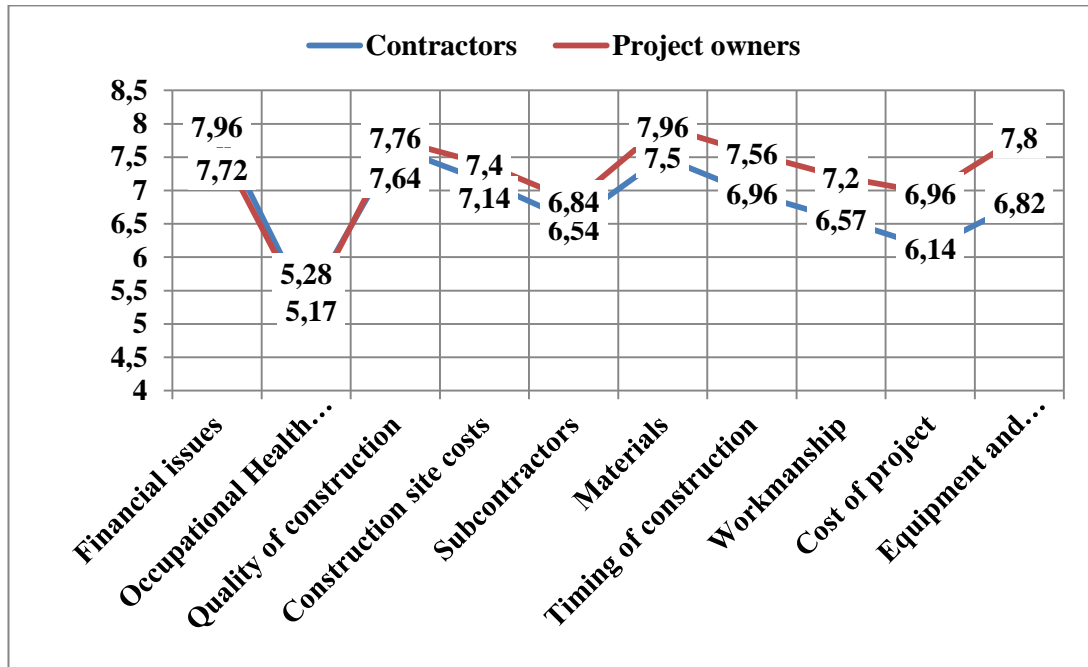


Figure 65: Viewpoints about a partnering system (contractors and project owners' comparable results)

Project partnering contract was never known by the contractors and project owners. After both contractors and project owners were introduced to and informed about this modern contract system, they showed great interest and huge support to it. Both contractors and project owners rated over 5 out of 10 in terms of 10 different criteria about the benefits of partnering system. The results are highly suggestive, pointing out that all participants believe that this modern contract type could solve majority of the problems to a great extent. This also shows that both parties are in need of collaboration, cooperation and mutual trust as these features lack in the traditional contract system that is being used.

From the rating results, it is clear that the three most essential benefits with the highest mean values are: financial issues (7,96/10 for contractors and 7,72/10 for project owners), material quality (7,50/10 for contractors and 7,96/10 for project owners), general quality of construction (7,76/10 for contractors and 7,64/10 for project owners).

To be specific, Figure 65 complements the results in Table 10. Contractors view partnering type contracts as a solution to financial problems which is also experienced as one of the largest problems according to the results in Table 10. The same also applies to project owners, who believe the new system could solve the problems related to the quality of materials which has one of the highest ranks in Table 8.

In terms of contractor and project owner perceptions, it can be understood from Figure 65 that the opinions of both parties differ in terms of equipment, cost of project and the quality of workers. It seems that contractors have lower expectations than project owners in these aspects. Although all participants gave high rates to these issues, the results show that project owners have a more positive approach and viewpoint towards partnering type contract.

6.4.4 Suggestions of Parties to Overcome Experienced Problems in the Construction Sector

In order to provide a more efficient, beneficial and successful situation for both parties, many suggestions have been proposed by contractors and project owners which are summarized in Table 12.

Table 11: Suggestions that could prevent emerging problems in the construction process

	Contractors	Project owners
Materials	<ul style="list-style-type: none"> → The need of new stone quarry → Taking some measures to prevent theft → The need of contracts about the quality of materials → Only standard materials should be allowed to be imported 	<ul style="list-style-type: none"> → The need of new stone quarry → Taking some measures to prevent theft → Increase of inspection on materials → The need of contracts (to be signed both by contractor and owner) about the quality of materials → Only standard materials should be allowed to be imported
Workmanship	<ul style="list-style-type: none"> → State inspection on construction sector is necessary → Better foreman-worker relations → There should be training for qualified foreman → Consciousness raising activities about construction sector should be encouraged → Improved supervision at construction sites → There should be training for qualified workers 	<ul style="list-style-type: none"> → There is a need for contract between contractor and owner → State inspection about construction sector → There should be training for qualified foreman → There should be training for qualified workers
Equipment and Vehicles	<ul style="list-style-type: none"> → There should be standard equipment for each project → New equipment should be used → Inspection of periodical servicing of equipment 	<ul style="list-style-type: none"> → All equipment should be provided by contractors
Sub-contractors	<ul style="list-style-type: none"> → There should be no sub-contractor during construction → There should be a legal contract between contractor and sub-contractor → Sub-contractors should be registered → There should be training for sub-contractors about the construction process 	<ul style="list-style-type: none"> → There should be training for sub-contractors about construction process → Engineers and architects should be involved more in the construction process → Regular supervision needed for sub-contractor work → There should be no sub-contractor during

	<ul style="list-style-type: none"> → Inspection on the workers of sub-contractors should be carried out → Regular supervision needed for sub-contractor work → Detailed contracts should be signed 	<p>construction of buildings</p> <ul style="list-style-type: none"> → There should be a legal contract between contractor and sub-contractor → There should be detailed contracts between contractors and sub-contractors
Construction site costs	<ul style="list-style-type: none"> → There should be a system to determine the necessary amount of materials → Strict supervision of sites is needed 	NO INITIATIVE
Project costs	<ul style="list-style-type: none"> → Experienced architect and engineers should be preferred to work with → Sub-contractors should be excluded from contracts → Each contract should be in accordance with the project 	<ul style="list-style-type: none"> → No demand for extra money on changes should be made in the project → Detailed contracts should be prepared for each project
General quality	<ul style="list-style-type: none"> → Big vehicle park should be preferred → High quality materials should be used → Regular supervision should be carried out on the quality → The number of qualified workers should be increased 	<ul style="list-style-type: none"> → High quality materials should be used → Regular supervision should be carried out on quality → The number of qualified workers should be increased
Timing	<ul style="list-style-type: none"> → Contractor and owner should work in harmony → There should be flexibility in extending time → Contract should include items about timing and conditions of extending time. → Work in shifts system should be employed → There should be time limits and monetary penalties in contracts 	<ul style="list-style-type: none"> → Delays due to the legal process in State Departments should be excluded in contracts → Contractor and owner should work in harmony → There should be time limits and monetary penalties in contracts → Contract should include items about timing and conditions of extending time.
Financial issues	<ul style="list-style-type: none"> → Contractors should not demand extra money → Contracts should include items about changes in exchange rates 	<ul style="list-style-type: none"> → Contractors should not demand extra money → Contracts should be prepared in more detail

	<ul style="list-style-type: none"> → There should be commercial court → There should be a right to stop the construction process in delay of payment conditions → Owners should have the right to check quality of materials. → Contracts should be prepared in more detail 	
Occupational Health and safety	<ul style="list-style-type: none"> → There should be an occupational safety expert at each construction site 	<ul style="list-style-type: none"> → The State should take more measures for safety reasons → There should be an occupational safety expert at each construction site

It can be clearly seen from Table 12 that the majority of suggestions made by both parties are similar or the same. This emphasizes the importance that both sides are aware of the matters in the construction process and have mutual recommendations that could solve many problems in advance. In addition to this, most of the suggestions proposed by the parties correspond with the principles of partnering type contract.

Chapter 7

CONCLUSION AND RECOMMENDATIONS

7.2 Conclusion

This study aims to discuss the suitability of partnering type contracts in Northern Cyprus by taking into consideration the conflicts experienced among parties. For long years, lump sum contract types and unit price contract types have been used in the construction sector, however, many issues have arisen which have led to serious matters and unpleasant results. Problems occurring in the construction process, actions taken to solve these problems, suggestions of parties and their attitudes towards partnering type contract were covered in this study.

According to the results of the questionnaire, the largest problem encountered by contractors is financial-related issues (6, 21/10) whereas the low quality of workmanship is the biggest issue for project owners (5/10) in the field of construction. Moreover, the analysis of the results shows that common actions were taken by project owners and contractors to solve the stated problems. Among these include applying to court in any case of unsolved issues, demanding new workers from sub-contractors and replacing the sub-contractor due to inefficiency. In addition to these main points, the results of the questionnaire show that both contractors and project owners perceive that partnering type contract could highly solve financial issues (7,96/10 for contractors and 7,72/10 for project owners), material quality

(7,50/10 for contractors and 7,96/10 for project owners), general quality of construction (7,76/10 for contractors and 7,64/10 for project owners).

The results of this study indicate that the traditional contract system is not efficient in many areas of construction and also leads to complications and emerging problems for both parties. Furthermore, by considering the high rate results of project owners' and contractors' viewpoints towards partnering type contract as well as the similarities between the suggestions proposed and the principles of partnering type contracts, it is obvious that a partnering type contract system is more convenient and necessary for the conditions of contractors and project owners. This will establish stronger relationships between parties and lead to more successful achievements. Taking consideration of the problems experienced, the partnering type contract could be a large development in the construction industry of Northern Cyprus. The partnering system could be beneficial in terms of; a shift from an opposing and manipulative relationship towards a cooperative and collaborative relationship, a decrease in the number of litigations, a transparent and stronger communication, the exact completion of the project as agreed upon in the contract and a solution to financial issues.

According to the results obtained in this study, it can be explicitly understood that the problems experienced by parties are constantly repeating hence has a big impact on the parties in various aspects. Moreover, although contractors and project owners were not familiar with partnering type contracts, the majority of their suggestions are equivalent to the features of this partnering system. After contractors and projectors were enlightened about partnering type contract, it can be seen from the survey

results that it is a favoured system as it would solve the experienced problems to a great extent. Based on the results, it can be concluded that by utilizing partnering type contract in the Northern Cyprus construction industry, both parties would benefit to the greatest extent.

7.3 Recommendations

Recommendations made for further studies are stated as follows:

1. Considering the perceptions and attitudes of sub-contractors in partnering type contract.
2. Investigating financial gain for project owners in the application of partnering type contract.

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APPENDICES

Appendix A: Contractor Question Form

Good afternoon/evening. My name is Fikri Yücelgazi. I am carrying out a study on the topic partnering which is a widespread application used in USA initially, Europe and other countries around the world. In order to find out the perceptions, attitudes and suggestions of contractors in Northern Cyprus, your participation is important for us. We express our sincere gratitude for your contribution to this research which will be used for a thesis paper.

A. Problems Experienced By Construction Firms and Actions Taken to Solve These Problems

1. As known, various problems could occur between contractors and project owners when a project is undertaken. From the following areas, to what extent have you experienced problems with project owners recently (in the last three years)? Please give your response by rating the degree of the problem out of 10 from 1 which refers to “no problem at all” to 10 which refers to “a large problem”.

Construction Sector problems	The degree of the experienced problems (1-10)
Materials	
Workmanship	
Equipment and vehicles	
Sub-contractor	
Construction site costs	

Project costs	
Quality of construction	
Timing	
Financial issues	
Occupational health and safety	

2. Please specify the problems you experienced in each area.

Note: Only respond to the area which you rated 5 or over for the previous part.

Construction Sector problems	Experienced problems
Materials	
Workmanship	
Equipment and Vehicles	

Sub-contractor	
Construction site costs	
Project costs	
Quality of Construction	
Timing	
Financial issues	
Occupational Health and safety	

3. What kind of actions did you take in order to overcome these problems? Did you achieve a positive result from these taken actions?

Construction Sector problems	What was done to solve the problem?	The result/the situation of solving the problem
Materials		
Workmanship		
Equipment and Vehicles		
Sub-contractor		
Construction site costs		
Project costs		
Quality of Construction		

Timing		
Financial issues		
Occupational health and safety		

B. Suggestions to Solve Problems

1. In your opinion, what is most reasonable solution to overcome the problems in each area (you may or may not have experienced the problems) Taking consideration of the circumstances in Northern Cyprus, what are your suggestions to solve these problems?

EConstruction Sector problems	Suggestions to solve the experienced problems
Materials	
Workmanship	

Equipment and Vehicles	
Sub-contractor	
Construction site costs	
Project costs	
Quality of Construction	
Timing	
Financial issues	
Occupational health and safety	

2. According to a newly developed construction contract type method, the contractor could only be chosen by project owners via tendering with the overheads and mark-up being included in the amount. Later, all kinds of materials, workmanship and sub-contractors become determined by the project owner in collaboration with the contractor in separate tenders. Considering the project agreement made from the beginning which organizes tendering for all kinds of materials, workmanship, equipment and sub-contractor and allows collaborative decisions to be made by project owners and contractors, to which extent could it solve the experienced problems in the areas below?

Construction Sector problems	Overcoming problems rate (give according to 0 – 10 scale)
Materials	
Workmanship	
Equipment and Vehicles	
Sub-contractor	
Construction site costs	

Project costs	
Quality of Construction	
Timing	
Financial issues	
Occupational health and safety	

C. Firm Information

1. Years of firm activity
2. Number of employees in firm

Date and time of interview:

Name of interviewed construction firm:

Appendix B: Project Owner Question Form

Good afternoon/evening. My name is Fikri Yücelgazi. I am carrying out a study on the topic partnering which is a widespread application used in USA initially, Europe and other countries around the world. In order to find out the perceptions, attitudes and suggestions of contractors in Northern Cyprus, your participation is important for us. We express our sincere gratitude for your contribution to this research which will be used for a thesis paper.

A. Problems Experienced by Project Owners and Actions Taken to Solve These Problems

1. As known, various problems could occur between contractors and project owners when a project is given to civil engineers. From the following areas, to what extent have you experienced problems with contractors recently (in the last three years)? Please give your response by rating the degree of the problem out of 10 from 1 which refers to “no problem at all” to 10 which refers to “a large problem”.

Construction Sector problems	The degree of the experienced problems (1-10)
Materials	
Workmanship	
Equipment and vehicles	
Sub-contractor	
Construction site costs	
Project costs	
Quality of construction	

Timing	
Financial issues	
Occupational Health and safety	

2. Please specify the problems you experienced in each area.

Note: Only respond to the area which you rated 5 or over for the previous part.

Construction Sector problems	Experienced problems
Materials	
Workmanship	
Equipment and Vehicles	
Sub-contractor	

Construction site costs	
Project costs	
Quality of Construction	
Timing	
Financial issues	
Occupational health and safety	

3. What kind of actions did you take in order to overcome these problems? Did you achieve a positive result from these taken actions?

Construction Sector problems	What was done to solve the problem?	The result/the situation of solving the problem
Materials		
Workmanship		
Equipment and Vehicles		
Sub-contractor		
Construction site costs		
Project costs		
Quality of Construction		
Timing		

Financial issues		
Occupational health and safety		

B. Suggestions to Solve Problems

1. In your opinion, what is most reasonable solution to overcome the problems in each area (you may or may not have experienced the problems) Taking consideration of the circumstances in Northern Cyprus, what are your suggestions to solve these problems?

Construction Sector problems	Suggestions to solve the experienced problems
Materials	
Workmanship	
Equipment and Vehicles	

Sub-contractor	
Construction site costs	
Project costs	
Quality of Construction	
Timing	
Financial issues	
Occupational health and safety	

2. According to a newly developed construction contract type method, the contractor could only be chosen by project owners via tendering with the overheads and mark-up being included in the amount. Later, all kinds of materials, workmanship and sub-contractors become determined by the project owner in collaboration with the contractor in separate tenders. Considering the project agreement made from the beginning which organizes tendering for all kinds of materials, workmanship, equipment and sub-contractor and allows collaborative decisions to be made by project owners and contractors, to which extent could it solve the experienced problems in the areas below?

Construction Sector problems	Overcoming problems rate (give according to 0 – 10 scale)
Materials	
Workmanship	
Equipment and Vehicles	
Sub-contractor	

Construction site costs	
Project costs	
Quality of Construction	
Timing	
Financial issues	
Occupational health and safety	

C. Project Owner Information

1. Occupation of project owner: firm, public institution, individual

Date and time of interview:

Name of interviewed project owner: