

T.R.
GEBZE TECHNICAL UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

**INVESTIGATING THE CRITICAL SUCCESS FACTORS [CSFs]
OF CLAIMS MANAGEMENT IN THE CONSTRUCTION
CONTRACTS**

EMİNE GÖKÇE ÇİNKÖ
A THESIS SUBMITTED FOR THE DEGREE OF
MASTER OF SCIENCE
DEPARTMENT OF CIVIL ENGINEERING

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THESIS SUPERVISOR
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GEBZE

2023

T.C.
GEBZE TEKNİK ÜNİVERSİTESİ
FEN BİLİMLERİ ENSTİTÜSÜ

**İNŞAAT SÖZLEŞMELERİNDEKİ HAK
TALEBİ YÖNETİMİNİN KRİTİK BAŞARI
FAKTÖRLERİNİN ARAŞTIRILMASI**

EMİNE GÖKÇE ÇİNKÖ
YÜKSEK LİSANS TEZİ
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GEBZE
2023



YÜKSEK LİSANS JÜRİ ONAY FORMU

GTÜ Fen Bilimleri Enstitüsü Yönetim Kurulu'nun 02/02/2023 tarih ve 2023/09 sayılı kararıyla oluşturulan jüri tarafından 20/02/2023 tarihinde tez savunma sınavı yapılan Emine GÖKÇE ÇİNKÖ'nün tez çalışması İnşaat Mühendisliği Anabilim Dalında YÜKSEK LİSANS tezi olarak kabul edilmiştir.

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İMZA/MÜHÜR

SUMMARY

Construction projects that start with a contract signed between the parties are complex due to their nature. Because of project's peculiarities and complex structure, operation of these contracts is crucial to the project's success. It is crucial for effective project management that conflicts between stakeholders are settled quickly and appropriately without affecting the project's scope, budget or quality.

The goal of this working is to assign the crucial achievement elements for claim management in contracts signed for construction projects, which are expanding daily. For this purpose, first of all, a meticulous literature review was conducted. The data obtained as a result of the scanning were evaluated together with the market experts. A comprehensive survey was conducted to determine the importance of the success criteria determined as a result of the evaluation and their effect on the damage management success.

The conclusions of questionnaire applied to the employees of Turkish construction companies, whose share in the construction industry is increasing worldwide, were evaluated by factor analysis in SPSS 25. As a result of the data obtained as a result of the evaluation, the most influential factors on success were determined. At the same time, these critical success factors are grouped according to their scope. Simultaneously, the study was supported by making determinations such as the characteristics of the participants.

The application of the information gleaned from the study, while taking into account the claim management procedures in building contracts, is expected to boost project success by preventing time and expense overruns.

Key Words: Claim Management, Critical Success Factors, Construction Contracts, Construction Projects.

ÖZET

Günümüzde taraflar arasında imzalanan sözleşme ile başlayan inşaat projeleri yapısı gereğiyle karmaşıktır. Proje özellikleri ve sahip olduğu çoklu yapı sebebiyle bu sözleşmelerin yönetimi proje başarısında oldukça önemlidir. Başarılı bir proje yönetimi için taraflar arasında yaşanan anlaşmazlıkların proje süresini, maliyetini ve kalitesini etkilemeyecek en uygun ve en hızlı şekilde çözümü esastır.

Bu çalışmada gün geçtikçe büyümekte olan inşaat projeleri için imzalanan sözleşmelerdeki hak talebi yönetiminde etkin olan kritik başarı faktörlerini tespit etmek amaçlanmıştır. Bu amaç doğrultusunda öncelikli olarak titiz bir literatür taraması yapılmıştır. Tarama sonucunda elde edilen veriler, piyasa uzmanları ile beraber değerlendirilmiştir. Değerlendirme sonucunda tespit edilen başarı faktörlerinin hak talebi yönetimi için önemini ve hak talebi yönetiminin başarısına etkisini belirlemek amacıyla kapsamlı bir anket düzenlenmiştir.

İnşaat sektöründe dünya çapındaki payı giderek artmakta olan Türk inşaat firmalarının çalışanları üzerinde uygulanan anketin sonuçları SPSS 25 de faktör analizi yapılarak değerlendirilmiştir. Değerlendirme sonucunda elde edilen veriler neticesinde belirlenen faktörlerden başarıya en çok etki edenleri tespit edilmiştir. Aynı zamanda bu kritik başarı faktörleri kapsamı doğrultusunda gruplandırılmıştır. Eş zamanlı olarak katılımcılara dair yaş ve deneyim gibi tespitler de gerçekleştirilerek çalışma desteklenmiştir.

Çalışmanın sonucunda elde edilen verilerin inşaat sözleşmelerindeki hak talebi yönetimi uygulamalarında dikkate alınarak uygulanmasının, projelerdeki zaman ve maliyet kayıplarının önüne geçeceği ve bu sayede projelerin başarısının artacağı öngörülmektedir.

Anahtar Kelimeler: Hak Talebi Yönetimi, Kritik Başarı Faktörleri, İnşaat Sözleşmeleri, İnşaat Projeleri.

ACKNOWLEDGEMENTS

I expect that the study will be taken into consideration for claim management, which is a part of the management of contracts in the construction market, which is one of the engines of the economy for our country.

I would want to state my appreciation to Assoc. Prof. Dr. Sevilay DEMİRKESEN ÇAKIR, who helped me with my thesis and provided me with guidance through her extensive knowledge and worldview. It was made feasible to perform this work because of her persistence, encouragement, guidance, support, and knowledge during the research for this project.

I want to state my appreciation to the other committee members Assoc. Prof. Dr. Onur ŞEKER and Assoc. Prof. Dr. Atilla DAMCI for their time, helpful criticism, and inquiries.

Finally, I want to state my appreciation to my lovable wife Cem ÇİNKÖ for his unending relief and affection.

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LIST OF ABBREVIATIONS AND ACRONYMS

<u>Abbreviations and Acronyms</u>	<u>Explanations</u>
ADR	: Alternative Dispute Resolution
CFA	: Confirmatory Factor Analysis
CSFs	: Critical Success Factors
BIM	: Building Information Modelling
EFA	: Exploratory Factor Analysis
ENR	: Engineering-News Record
KMO	: Kaiser-Meyer-Olkin
min	: minutes
SPSS	: Statistical Package for the Social Sciences

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1. INTRODUCTION

Construction projects, which are growing day by day, usually start with a contract signed between the parties. The gradual growth of the volumes of the projects causes both the increase in the number of parties and the more complex the management of the contracts. With this structure, the correct management of the contracts along the project directly affects the growth of the study in positive way.

Due to their vulnerability to outside factors and inherent uncertainties, construction projects are frequently seen as difficult and high-risk endeavors [Okudan et al., 2021]. The complex nature of construction projects creates claims and disputes [Joshi and Pimplikar, 2021]. Successful management of projects depends on the quick and effective resolution of these claims between the parties.

Demands management is crucial in construction contracts since it reduces project performance and adds financial strain [Prasad et al., 2019], [Aibinu and Jagboro, 2002]. All companies that are aware of the situation strive to prevent these claims before they occur or to develop effective strategies if they do occur.

Despite these strategies, which are tried to be developed by taking into account the claims issues that are frequently encountered in construction projects, it is still quite arduous to evaluate the claims and solve them effectively without damaging the project. These difficulties cause many problems such as not completing the projects on time, not enough economic resources, compromising quality conditions.

A successful claim management projects; it will ensure that it is completed on time, with the planned economic resources and in a quality manner. For this reason, especially in the last decades, the stakeholders of large projects value a successful claim management. Successful implementation of this management will prevent many problems of the sector.

1.1. Problem Statement

Many works have been conducted on the factors that lead to claims in building projects. For instance, in Building Information Modeling [BIM] procedures, Dao and Chen [2021] concentrate on impact-oriented risk claims. According to Chan et al. [2010], establishing target costs is crucial for building projects since it can lower the likelihood of claims and disputes. To prevent disputes and conflicts, Chan et al. [2004]

hinted to the significance of partnerships in building contracts. They identified a number of variables in their study that contribute to antagonistic relationships in building projects, including a being without reliance, a being without cooperation, and inadequate linkage. These have a great probable to drive to disputes and conflicts in the projects. Despite the various causes of conflicts and disputes being examined in these research, a comprehensive list of the factors impacting claims management in construction contractors is still required in literature.

1.2. Aims and Objectives of the Research

Qua construction projects become more complex; more effort and more advanced tools are required for success [Qammaz and AlMaian, 2020]. This situation reveals the importance of success in claim management. Numerous variables affect whether the suggested tools and intervention tactics for claims management will be successful over the long term.

This study creates a thorough list of the variables influencing claims handling in construction contracts and classifies these variables according to their traits. This complete set of factors might guide both industry practitioners, policymakers, and researchers in terms of focusing on the most dominant factors creating the most claims, and developing research and strategies accordingly.

The study's major objective is to identify the achievement elements that influence claim management in construction contracts in order to improve practitioners' future success. Many current issues will be resolved with the effectiveness of claim management once the conclusions of this study are addressed by industry practitioners. Some of these goals can be recorded as follows:

- i) Facilitating the resolution of possible conflicts between the parties
- ii) Time and money savings throughout project execution
- iii) Elimination of claims involving intensive litigation processes

If this study is taken into account by researchers and policy makers, it is also aimed to develop these success factors and make them more applicable versions of claims management within the industry.

1.3. Research Method

First of all, recently written sources were scanned based on keywords such as claim management, contract management, success factors, construction sector stakeholders, etc., which are within the scope of the research topic. After a comprehensive literature review, 44 factors were identified in the first place. Some of these factors were combined after taking expert opinion. Again, some of them were excluded from the list due to the being without proof within literature. As a result of all this study, the number of factors was determined as 32 and the relevant factors were explained and listed together with their sources.

To find these criteria and logically organize them, an online poll was made and distributed to the Turkish construction industry's construction firms. The SPSS 25 Factor Analysis program was used to examine the survey data. The information acquired through the use of the questionnaire was examined to arrive at the conclusions.

1.4. Scope and Limitations

Claims management is an important concept to ensure success in the construction sector. It is predicted that a very broad community, especially in our country, will be guided by the information gleaned from this study. These study findings, which are planned to be used by industry practitioners, will improve claims management.

In addition to all this, the fact that the backgrounds of the people who participated in the survey applied within the scope of the study were not known, limited the study. Also, the sample size used for the survey also limits the study. If the aforementioned survey is applied to a different sample size in a different region, differences in the results may be observed.

1.5. Organization of Thesis

This exploratory involves six portions. In the first part of this study, which is the introductory part, first of all, the problem is determined, then the study's objective is mentioned and the research method is briefly explained. The study's scope,

restrictions, and overall plan are described in the same section. In the second part, claim management in construction contracts is examined. The list of determined elements and significant points are discussed in the third step, which also includes a literature review and the study technique. The findings of the study are reported in the fourth section and a list of the topics to be discussed in the fifth section. Finally, in the sixth step, conclusions and recommendations for success in claim management in construction contracts are presented. The way the study is set up in detail in Figure 1.1.

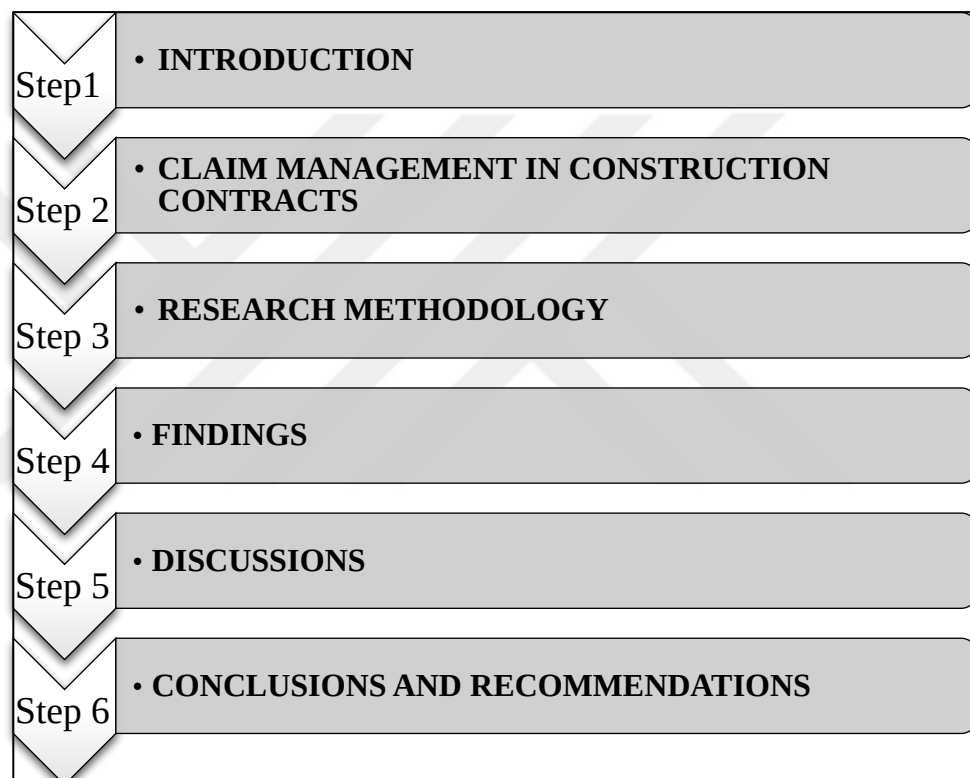


Figure 1.1: Organization of the study.

2. CLAIM MANAGEMENT IN CONSTRUCTION CONTRACTS

Since the late 1970s, the construction industry has undergone a marked change due to increasing project sizes, technical complexity and high risks [Ren et al., 2001]. Compared to past times, the projects planned and realized in this industry are much more qualified and complex. Additionally, constructing requires a lot of various steps and takes a long time [Noorzai and Golabchi, 2020]. In parallel with these changes, the share of the construction sector in economic growth has grown considerably, especially in developed countries. The increasing world population and many other industries concerned to the construction market can be shown as the reason for this growth.

The scope of this industry ranges from a small residence to subways, dams, nuclear power plant, smart cities etc. it is quite broad, up to large infrastructure projects such as. From the geological conditions to the service step, every project is unique [Joshi and Pimplikar, 2021]. This unique feature of each building in its stages requires the projects to be evaluated according to their own conditions. There are therefore usually recognized applications that satisfy the success criteria, even though the success of the projects varies based on the circumstances that arise based on the project's specific qualities.

Regardless of size, today all construction projects are carried out on a contract basis. Construction contracts are works that involve many stakeholders due to their structure. A typical contract includes parties such as owners, administrations, project managers, general contractors, subcontractors and suppliers [Thompson, 1998]. Construction contracts are required to make assignments about risks to contracting parties. Both parties assume several risks in building projects, including those related to human error and the unexpected, which could result in losses for project participants [Ren et al., 2001]. The idea of these stakeholders working in harmony and completing the project as planned is essential by all parties.

The performance of the job depends on the collaboration of all parties, including the owner, consultant, contractor, and even the supplier [Hayati et al., 2019]. Thanks to the cooperation, the probability of success will be high in long-term construction projects with a wide scope and many activities. However, due to the fact that the goals

and interests of the parties are different from each other, some disagreements may arise pending project planning, development and practice instances.

A claim is just a request made by one of the parties to examine or modify the construction process. In the construction sector, a claim may develop for one or a combination of causes [Arditi and Patel, 1989]. Claims are tools that enable contracting parties to adjust their contracts to meet contractual current and changing economic conditions [Parikh et al., 2019].

Due to the distinctive, dynamic, and complicated nature of the sector, disputes inevitably develop and cause claims to be made [Ren et al., 2001]. If the conflicts within the project are not resolved, they turn into claims, and if they remain unresolved and unattended, they turn into disputes [Joshi and Pimplikar, 2021]. Lots of project subscriber's view construction disputes as one of the best upsetting and insipid incidents that has ever occurred on a job [Ho and Liu, 2004]. Nevertheless construction disputes are frequent and difficult to resolve, often not sought because legal advice is not available or expensive [Diekman and Nelson, 1985].

In order to advance a request before moving on to negotiation and agreement, claim management, according to Kululunga [2011], entails leveraging and coordinating identification and analytical resources through preparation and presentation. Keane [1994] is defined as claim management is employing process and the process of defining, perusing, presenting, negotiating, reconciling resources by coordinating resources to advance a claim. Just as important as demand management and "human" issues is knowing the terms of the contract and taking a fair risk [Vidogah and Ndekugri, 1998]. The fundamental objective of the dispute management commit is influential and fertile address precise concerns that arise from the beginning to the end of a project, according to all definitions.

Time, money, and quality have historically been the three main criteria that determine a project's success [Noorzai, 2020]. Because of the unpredictable, complicated, multilateral, and dynamic periphery of construction projects, finishing the project on time is a challenging undertaking [Kartam, 1999]. The job is unquestionably thriving if it is done on schedule, within budget, and with the highest grade possible. In order to achieve this success, claims should be encountered as little as possible. Although this is the intended outcome, no building project can be found without claims. Compensation claims will continue in the event of management failure, notwithstanding the best construction contract knowledge and the most logical

risk-distribution scheme [Zaneldin, 2006]. Therefore, it will be an advantage for the project stakeholders to be prepared for this situation from the beginning. It is necessary to determine the claim management before the project starts and to make a risk management planning in parallel.

Building firms, real estate developers, government agencies and owners face reputational problems when claims hit the news media headlines [Riad et al., 2001; Arditi and Patel, 1989]. The reputation problem will negatively affect both the current project and the upcoming work of the stakeholders.

Project owners are obligated to manage contractor claims according to a step-by-step general method [Abdul-Malak et al., 2022]. Additionally, project owners must adhere to a thorough process for monitoring and addressing claims made by contractors [Bakhary et al., 2014]. The fact that this procedure is planned before the work starts will make things easier. Acting according to a specific procedure will result in a shorter evaluation and reaction time.

Claim management relies heavily on legal guidelines, other pre-construction phase management theories, risk management theory, and project procurement, which primarily entails standard construction contract templates. These factors are in addition to claim management activities carried out during the construction phase. When choosing contractors and contracts, the client team in particular needs to have a fair attitude toward risk. This also applies to allocation forms, estimation, scheduling, and contract conditions [Ren et al., 2001].

The difficulty of claim management, according to current industry practice, stems less from the management procedure than from the inefficiency of management activity at every phase. Two most crucial components to support a claim, for instance, have been identified as determining the reasons for the claim and having adequate documentation [Ren et al., 2001]. After the emergence of a claim, there will be a case of being right and wrong. The presentation that the claimant will make to the authority to prove his rightness should be prepared as systematically and as quickly as possible. Otherwise, unplanned and incomplete progress of the process will negatively affect the entire project, regardless of the size of the claim.

Contractors file a claim in accordance with the procedures provided in the terms of the contract, provide information about any additional expenses and time, and offer sufficient proof [Bakhary et al., 2014]. After this stage, the evaluation process of the project by the managing stakeholders begins. As stated before, if there is a prearranged

procedure for these issues, the evaluation will be more systematic. Accordingly, the result becomes clear in a shorter time and the project is prevented from being negatively affected by a claim.

The construction market is facing disputes and receivables problems day by day [Levin, 1998]. Construction claims detrimentally impact the project objectives and relations between the contracting parties. [Viswanathan et al., 2020]. Claims are resource consuming, insipid, and costly [Kisi et al., 2020]. All project stakeholders will suffer from the time and expense overruns that will be encountered as a result of the poorly handled conflicts.

It is imperative that the contractors submit requests in accordance with the stages outlined in the contract, specify the additional costs to be incurred, and provide sufficient justification [Bakhary et al., 2015]. The claim process consists of six strategic steps: identification; notification; review; documenting; exhibition; and meeting [Zaneldine, 2006]. The process was similarly outlined by Levin [1998], who listed the following steps: Identification of the request, the reason for the existence of changes, customer feedback, systematic, full documenting, detailing of period and cost expenses, pricing, negotiation and conflict resolution. Similar claim stages are also expressed by Easton [1989] and Kartam [1999]. In order for the claims to be resolved without causing any harm to the project, these steps must be followed up completely by the parties. This process, which should be recorded from beginning to end by the claimant and the evaluator project stakeholder, should be concluded in an efficient manner as soon as possible.

In order for the claims management, which is an issue that affects the success of the projects so much, to be carried out correctly by the stakeholders of the sector, the reasons for the occurrence of the claims and the solutions should be well known by the parties. Measures should be developed by taking into account the types of claims experienced within the sector, and management procedures should be arranged to include these measures. Through the investigations conducted in this part, it will be decided which claim kinds, claim types, and eventually claim resolution methods are judged to have the most impact on the sector's project success.

2.1 Claim Causes in Construction Projects

The ongoing expansion of the construction sector is a direct cause of the construction claims that have been present in practically every construction project for years. The number of claims encountered is on the rise as project scopes grow bigger, more complicated, and multi-stakeholder every day.

Claims occur when one of the parties to a construction contract thinks the other side has not completed its portion of the job in some way, whether through an act or an omission [Levin, 1998], [Kartam, 1999]. It is frequently a complicated scenario, and disputes are unavoidable due to the confusion of the various project stakeholders and differences of opinion among the project participants [Naji et al., 2020]. Participants in the project view claims as one of the most unpleasant situations that might occur during a project [Winch, 2010]. It is important to prevent claims before a building project even begins and to deal with claims as soon as they appear [Bakhary et al., 2017].

Claims in construction projects arise from many direct and indirect reasons [Institute 1986]. In the construction sector, a claim may arise for one or a combination of several reasons [Arditi and Patel, 1989]. This reason may be quite simple, or it may have a complex reason. Many claims and disputes arose from a vague, incomplete and inadequate understanding of contract forms and terms [Ren et al., 2001]. An essential first step in settling these claims is to examine the diversified styles of claims and their occasions [Ren et al., 2003].

Many of the frequent disputes are brought about by things like various site provisions, project modify commissions, lateness, supervisory issues, variations in how plans and specifications are interpreted, activities that are not completed, work schedule lag, inefficiency, and disturbance [Arditi and Patel, 1989].

In the contract, the period until the delivery after the date on which the project will be delivered by the parties has passed is called delay. Delay, which is a relative term, is one of the key occasions for the formation of claims. [O'Brien, 1976].

The demand for receivables between the parties in the construction industry has increased so much that it is present in almost every project and these demands are due to some reasons [Bakhary et al., 2015].

Numerous methods have been used in the literature to investigate the different categories of construction disputes, pinpoint their underlying occasions, and suggest

preventative measures [Zaneldin, 2006]. The data obtained as a result of the extensive research on the reasons for the claims in the literature have been tabulated. In Table-2.1, a few of these investigations are listed.

Table 2.1: Reasons for claims obtained from literature review.

No	Author	Claim Causes	Public Name
1	David Arditi and Bhupendra K Patel, 1989	Site circumstances Change commands Delays Delays' impact and concomitant effects issues with inspection Owner-supplied goods Plan and specification interpretation discrepancies, unfulfilled obligations, speeding up, inefficiency, and disruption Unrealistic contract costs and length	Expert System For Claim Management In Construction Projects
2	Essam K. Zaneldin, 2006	Orders for changes or variations Owner-caused delay Owner-issued oral change orders Owner's late payments Due to intense competition, the contract price was low. Cost variations for labor and materials Owner character variations in the amounts issues with subcontracting Contractor-caused delay Contractor lacks organizational skills issues with the contractor's finances Government regulations, poor contractor quality Estimation mistakes Scheduling mistakes Execution mistakes Errors in the design or omissions bad relations between the parties Issues below the surface 37.0 20 Inconsistencies in the drawings and specifications Work Termination Poorly drafted contracts Workplace suspension Accidents Planning blunders	Construction claims in United Arab Emirates: Types, causes, and frequency
3	Nor Azmi Bakhary, Hamimah Adnan, Azmi Ibrahim, 2014	Design changes A project is being completed quickly with insufficient site study, design work, tendering, and contract documentation. Inadequate definition contract documents Incomplete and/or uncoordinated design	A Study of Construction Claim Management Problems in Malaysia
4	Majid Parchami Jalal, Tayebe Yavari Roushan, Esmatullah Noorzai and Maryam Alizadeh, 2020	Delay cite, technical documents and material Errors cite and technical documents Change drawings and materials	A BIM-based construction claim management model for early identification and visualization of claims
5	N. Riad,D. Arditi and J. Mohammadi, 1991	Delay	A Conceptual Model For Claim Management In Construction: An Ai Approach

Table 2.1: continued.

	Kemala Hayati, Yusuf Latief, Ayomi Dita Rarasati, 2019	Owner requirements changing Owner modifications to the design during the post-tender award phase A project is being completed quickly with insufficient site study, design work, tendering, and contract documentation. Insufficient definition and/or specificity of the specified contract scope Uncoordinated or incomplete design The owner's expectations are not clear enough, or the design brief is not sufficient	Causes and Problem Identification in Construction Claim Management
6	By G. K. Kululanga, W. Kuotcha, R. McCaffer, Member, ASCE, and F. Edum-Fotwe; 2001	The contract documents are flawed and contain errors and omissions. Underestimating the true cost of a project at the outset Altered circumstances Parties with an interest in a project	Construction Contractors' Claim Process Framework
7	Emre Cakmak, Pinar Irlayici Cakmak; 2014	Owner connected [variations initiated by the owner, change of scope] Concerning contractors [delays in work progress, time extensions] Design-related [inadequate or missing specs, design quality] Tied to a contract [ambiguities in contract documents, risk allocation] Human conduct [lack of communication] Tied to a project [site conditions] External variables [legal and economic factors]	An Analysis Of Causes Of Disputes In The Construction Industry Using Analytical Network Process
8	B. Heath, B. Hills, and M. Berry; 1994	Extensive time period Variations in the amounts Variations in requirements The drawing Others	The Nature and Origin Of Conflict Within The Construction Process
9	S. Rhys-Jones; 1994	Poorly managed Negative culture Communication problems Inadequate design unfeasible tenders economic environment The impact of attorneys Clients' unrealistic expectations Poorly drafted contracts The work is subpar	How Constructive is Construction Law?
10	A. H. Al-Momani; 2000	A bad design Change commands Site conditions Weather A tardy delivery Economic circumstances Augmentation of quantity	Construction Delay: A Quantitative Analysis
11	D. I. Bristow and R. Vasilopoulos; 1995	Parties' unrealistic expectations Contract documents that are unclear Participants in the initiative don't communicate well enough Lack of teamwork Inability of participants to respond quickly to changes and unexpected results	The New CCDC 2: Facilitating Dispute Resolution of Construction Projects

Table 2.1: continued.

12	K. Divakar and S. S. Kumar; 2015	Unaddressed impact or effect of changes in terms of time and cost Time extension Price increase Failure to pay as required per the contract Work is put on hold when it is subpar Risk to contractors and employers Tender assessment Work excellence Unwillingness to ask for financial stability clarity	Study On Sources Of Disputes In Construction Projects, To Incorporate Suitable Clauses In Contract For Dispute Resolutions
13	J. Killian; 2003	Change orders, pre-award design reviews, pre-construction conference sessions, and quality assurance are examples of project management techniques. Design flaws [errors in drawings and defective specifications] Purchasing agent [knowledge of local statutes, faulty negotiation procedure, scheduling, bid review] Contractual procedures Site administration [scheduling, project management procedures, quality control, financial packages] Errors in bid development [estimating errors]	A Forensic Analysis Of Construction Litigation, US Naval Facilities Engineering Command
14	I. Mahamid; 2016	Owner's late payment of progress Improbable contract length Change commands Work that was executed inefficiently and with poor quality Insufficient contractor expertise Poor communication between construction parties Inefficient contractor planning and scheduling Issues with money during building Poor estimation procedures	Micro And Macro Level Of Dispute Causes In Residential Building Projects: Studies Of Saudi Arabia
15	S. O. Cheung and T. W. Yiu; 2006	Conflict [task interdependency differentiations, communication barriers, tensions, personality traits] Trigger situations [nonperformance, payment, time] Contract clause	Are Construction Disputes Inevitable?
16	K. T. W. Yiu and O. Cheung; 2004	Concerning construction [variation and delay in work progress] Relating to human conduct [expectations and inter-party problems]	Significant Dispute Sources Of Construction Mediation
17	G. K. Kululanga, W. Kuotcha, R. McCaffer, and F. Edum-Fotwe; 2001	Contract paperwork that contain mistakes, flaws, or omissions Initial underestimation of the project's true cost Altered circumstances Participation of stakeholders in the project	Construction Contractors' Claim Process Framework
18	Shaikh H H, Zainun N Y and Khahro S H	Payment delays Unfinished design Inadequate drawings and specs Order of variation Weather Making choices Drawings and specification delays Site circumstances	Claims in Construction Projects: A Comprehensive Literature Review

Table 2.1: continued.

19	Bhagyashree Apte, Sudhanshu Pathak; 2016	Delay in Drawings' Supply Delay in Site Transfer Delay in Materials Supply Reduction in Payments Delayed beginning of work Delayed finishing of job Work performed but not measured and compensated Payment of the maintenance deposit back Loss resulting from increased costs as a result of the time restriction extension Loss brought on by idling equipment and workers Design flaws Insufficient or lacking specifications Inadequate design information inadequate bid information Inadequate preparation time for the bid Scope of the work changing Plan and specification modifications made during construction Insufficient specifications and plans Variations and additional items Failure to grant completion by the responsible engineer Construction site administration and management issues Contract documents that are unclear Different unbalanced approaches to interpreting the contract's clauses	Review of Types and Causes of Construction Claims
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The determination of the reasons for the claim will enable the determination of special, appropriate solution methods selected depending on the situation [Kumaraswamy and Yogeswaran, 2003]. The reasons for many of the allegations that are frequently detected and experienced in the table are listed below:

- i) Delay of payments and business schedule
- ii) Incomplete project conditions [Technical documents, projects etc.]
- iii) Inadequate specifications and drawings
- iv) Changing design and order
- v) Weather and site conditions

There are many other reasons that can be counted along with these such as weak communication, estimation errors, lack of professionalism etc. [Naji et al., 2020]. Some of the researchers group these reasons as contractual, organizational and technical [Elziny et al., 2016]. These explanations can also be divided into groups

based on where the dispute originated, such as owner-related, contractor-related, design-related, project-related, etc. [Cakmak and Cakmak; 2014].

2.2 Claim Types in Construction Projects

Claim requests for the reasons listed in the previous section are mostly divided into types depending on their sources. Classifications have also been made on the types of claims formed in many studies on the causes of claims. Understanding the reasons for claims under contractual provisions is the best way to avoid claims that may arise.

Zaneldin [2006], divided the allegations into six main categories depending on their type. These include (1) claims for contract ambiguity, (2) claims for delays, (3) claims for acceleration, (4) claims for revisions, (5) claims for more work, and (6) claims for different site conditions. In general, there are frequent reasons such as delay, contract uncertainties, site conditions, etc., where the classification parallels the reasons for the claim groupings were determined.

Claims encountered in projects are categorized as delays, contradictions, errors or defects, and demands arising from changes [Jalal et al., 2021]. This categorization was carried out by grouping the reasons for the claim. Contrarily, Apte and Pathak [2016] divided claim categories into the following categories for their studies on construction receivables: claims under contract, claims outside of contract, claims with merit, ex gratia claims, and counterclaims.

In a recent study by Shaikh, Zainun and Khahro [2020], claim types are eight grouped as follows:

- i) Delays,
- ii) Additional work,
- iii) Work acceleration,
- iv) Conflict in the contract,
- v) Extension of time claim,
- vi) Work suspension,
- vii) Contract termination,
- viii) Change in work volume.

Additionally, this category offers data on how frequently particular claim types are encountered. For example, 'Delay' in the first place is the most common claim group. Afterwards, the frequency of the claims group encountered is the same as the order above.

Al-Zwainy and Jaber [2018], examining previous studies and taking into account the professional experience of experts, divided the claim types into four groups. These are related to the owner [1], related to contractors [2], associated with the consultants [3] and related other factors. Contrary to this categorization, which is based on the source to which the claim is associated, the classification created by Bramble, D'Onofrio, and Stetson is more directly based on the content of the claim [1990]. They categorized the claims into four categories: change claims, impact claims, performance quality claims, and bad faith claims [Hadikusumo and Tobgay; 2015].

It has been observed in the literature that research on claim types depends on the type, content and frequency of claims experienced in the sector. In this respect, it can be said that the type of the claim is directly dependent on the reason for the occurrence of the claim.

2.3. Resolution Methods in Claim Management

Every building project is different, unpredictable, and has its own special circumstances [Ashworth, 2012]. Each project takes place with the participation of individuals with different responsibilities, from workers to foremen, journeymen, supervisors, project managers, architects and engineers, owners and representatives, inspectors and regulators [Tucker, 2005]. The success criteria are made more difficult by its intricacy, unpredictable nature, and originality. Success for the parties in construction projects is defined as finish the project within the defined time and cost [Bakhary et al., 2017]. Construction project disputes are viewed as a barrier to the project's effective completion [Conlin and Retik, 1997].

This structure is based on a text, contract, in which the responsibilities of the parties are stated. The contracting parties have a complicated relationship, and everyone involved wants the project to be successful. This necessitates careful planning of both time and resources [Bakhary et al., 2017]. For the project to be successful, contracting parties must work together to coordinate time, resources, and communication in a society of intricately interconnected interactions [Harmon, 2003].

The complexity of construction projects is increasing day by day, increasing the complexity of contracts and the likelihood of conflicts at any stage of the project lifecycle [Winch, 2010]. Conflicts are taken into consideration more often the more complicated a project is [Cheung et al., 2002], [Harmon, 2003]. Conflicts and claims turn into disputes if not handled well [Ren et al., 2003]. However, as contracts grew, technical complexities and the number of parties increased, so did the amount, frequency and size of project disputes [Mora et al., 2003].

Disputes arising between the reciprocal parties of the contracts may lead to disputes. Projects in the construction industry; It suffers significantly from budget overruns, delays and conflicts that cause loss of efficiency [El-Sayegh et al., 2020]. Complex construction can lead to complex disputes because of the magnitude and complexity of the work, the number of parties involved, the inadequate preparation and/or execution of the contract documents, the lack of proper planning, the existence of financial difficulties, and miscommunications [Harmon, 2003].

Construction projects are severely harmed by disputes because they can result in cost overruns, delays, and lost productivity. Therefore, in order to accomplish the construction project on schedule and within budget, it is crucial to comprehend the reasons behind disagreements [Barrie and Paulson, 1992]. Disputes are considered to be the nodal point that hinders success in construction projects. One of the reasons why they cause such concern for the industry is that they cause time and cost loss [Ren et al., 2003]. These disagreements cause the project objectives to deviate and the relations between the contracting parties to be strained [Alkass et al., 1995] Disputes are resource consuming, unlikeable and costly undertakings [Kumaraswamy and Chan, 1999].

Conflicts disrupt the work schedule, causing increased costs, delays, and many other negative effects [Yogeswaran and Kumaraswamy, 1998]. The costs of delays appear to rise at the same rate as project costs, which are rising significantly. However, regardless of the magnitude of the project, it is frequently observed that there exist differences [Gebken and Gibson, 2006].

Projects are designed with the goal that the subject of claims will never occur. Getting as close to the goal as possible depends on the meticulous work in preparation. Despite this strategy, practically all construction projects encounter claim problems throughout the realization phase. In case of claims, it is essential that the claim issue is resolved by the project parties with maximum efficiency and minimum duration. It

is recommended to avoid conflicts by improving communication in the industry and understanding the goals of others [Verster et al., 2013]

Unavoidable conflicts should be evaluated and resolved by project managers using resolution techniques [Martin and Thompson, 2011]. Due to the inherent levels of complexity throughout project stakeholders and the frequent distinctions in opinion among project participants, conflicts are unavoidable [Ren et al., 2003]. If disputes are not settled effectively, the project and the company could suffer serious damages [Adam, 2000].

When a dispute arises, there are different legal actions that can be taken to resolve it [Barrett, 2008]. Disputes arising between the parties; it can be resolved in many ways, from simple negotiations to complex cases [Ho and Liu, 2004]. Avoidance and resolution are the two most popular strategies for conflict mitigation. Early and late solution methods are those that must be used if possible. Negotiation, risk allocation, impartial early evaluation, and partnership prevention are all prevention strategies. Negotiation, conciliation, and mini-court/executive court are examples of early conflict resolution techniques. Negotiation, arbitration, mediation, court proceedings, conflict review panels, and litigation are among the late resolution techniques discussed [Kumaraswamy and Yogeswaran, 2003].

There were two possible definitions of dispute resolution for construction agencies. Teams had no meaningful alternatives to litigation other than these to settle conflicts while the project was being implemented. The first was for a design expert to make a non-binding decision, and the other was to go to binding arbitration [Divakar and Kumar, 2015]. It is advantageous to detect conflicts and disputes that may occur at an early stage [Naji et al., 2020]. Therefore, the construction industry needs alternative dispute resolution solutions

With the developing industry, alternative methods that provide a solution in a shorter time are applied without resorting to traditional methods as a dispute resolution method. The use of Alternative Dispute Resolution [ADR] methods to analyse conflicts and disputes has grown in popularity [Jannadia et al., 2000]. ADRs are identified as tools to avoid and resolve project conflicts and are included in conventional project contracts [Chong and Zin, 2010]. Project practitioners will benefit from research on ADR selection and use aspects, especially at the decision-making stage [Martin and Thompson, 2011].

Although the methods of ADR may seem different, they share a common feature, such as the involvement of a third party in the process of expressing or informing the disputed parties about the disagreement [Shavell, 1995]. These methods are increasingly encouraged and are much more effective in providing solutions than traditional methods.

Treacy [1995], listed a few advantages of these methods as follows:

- i) Take shorter time
- ii) Less expensive discovery,
- iii) Better case handling,
- iv) Increased privacy,
- v) Facilitating the parties' early, direct contact and comprehension of the crucial points on each side of the disagreement,
- vi) Maintenance of ongoing party relations,
- vii) Cost savings from trials,
- viii) Provision of qualified, impartial experts to hear complex matters.

It is known that these methods, which have many advantages, have been used quite widely recently. Additionally, many stakeholders and players in the construction sector are still ignorant of these conflict reduction techniques and advancements [Cheung and Yiu, 2006].

Here, some solution methods that are frequently used from past to present will be mentioned.

2.3.1. Litigation

The conventional approach to resolving disputes in construction contracts is through litigation. Litigation in construction; it can be defined as applying to the court to solve disputes that occurs [Alaloul et al., 2019]. Litigation in the situation of construction is the process of bringing or opposing legal action in court to settle a dispute [Heath et al., 1994]. Before resorting to this method, the dispute goes through three steps: the claim formation stage, the claim denial stage, and the failure to amicable resolution stage [Jagannathan and Delhi, 2020]. In these courts, juries make verdicts based on the testimony of witnesses and experts, and rulings can be appealed

to higher courts [Riad et al., 1991]. The solution to every dispute is not a lawsuit, but every dispute that is the subject of a lawsuit contains conflict [Ho and Liu, 2004].

Construction cases are complex and can arise for a number of reasons [Gerber and Serra 2011]. The behavior of the attorneys, who may favor the courts in the resolution of conflicts, influences how the parties approach the courts [Agapiou and Clark 2011]. This method is avoided for dispute resolution as this method is quite costly and time consuming for each of the parties [Al-Momani, 2000]. Although it is the most common and old resolution method, it is not an effective method because the solution time is long. In this method, which takes a long time, the parties lose time, money, energy and reputation.

Despite the existence of many solidary and win-win alternative dispute resolution [ADR] methods, research has been conducted on why this method is used. The outcome of these investigations is neither simple nor direct, because the case is the result of a series of actions/inactions by the disputing parties. Parties may embrace litigation as a dispute resolution tool for reasons such as the organization's cultural background, ego, feelings and litigation history, among many other reasons [Jones, 1994].

Public owners utilize litigation in courts of law, whereas private owners prefer alternative methods. In legal proceedings, juries render verdicts based on testimonies from witnesses and experts. The judgments are appealable to higher courts [Riad et al., 1991].

The fact that the laws that the courts of each country are obliged to implement are generally strict and the litigation processes take a long time due to the stages prevent this method from being an effective solution method. Also, in disputes resolved by this method, one of the parties wins while the other loses. [El-Sayegh et al., 2020].

Alternative dispute resolution [ADR] procedures like conciliation, mediation, adjudication, and other hybrid approaches have developed to bypass the litigation process [Kaplan et al., 1991], [Brown and Marriott 1999]. It is argued that going to court is sometimes, but not always, the best course of action for the parties' issues. Delays and litigation-related costs have recently increased significantly due to the volume and complexity of contract disputes [Bhole et al., 2018]. For this reason, litigation is the most effective solution that can be taken at the last stage, even if it is not preferred. In the event that the parties who cannot come to an agreement apply for

this solution, it will be an important step for the legal authorities to accelerate the process and reach the result as soon as possible, in order to minimize the damage that may occur.

2.3.2. Arbitration

Arbitration is a way for opposing parties to resolve disagreements and conflicts by turning to a neutral third party whose ruling is final [Alaloul et al., 2019]. By presenting a dispute to an unbiased party or parties, arbitration is an alternate conflict resolution process [Utama and Irsan, 2018]. Arbitration is consensual and cannot be carried out without the mutual agreement of the parties [Arditi and Patel, 1989]. Arbitration provisions have become the standard rather than litigation as a dispute resolution technique in agreements between owners, designers, and contractors [Mora et al., 2003]. Construction contracts have included arbitration clauses since 1871. Since then, this method has spread globally and its use has become quite common today [Stipanowich, 1997]. Since then, it has been used in standard contracts and has been the only alternative to litigation for many years [Treacy, 1995 and Stipanowich, 1997]. It is widely used in construction works carried out under both private and public contracts [Harmon, 2003]. A list of arbitrators is sent to both sides of the dispute; Referee selection must be made from the submitted list [Alaloul et al., 2018]. If the parties do not choose the arbitrator, an arbitrator may also be appointed by a court [Utama and Irsan, 2018]. Referees are generally knowledgeable and qualified in construction projects [Mix, 1996]. Arbitrators, as opposed to judges, frequently have a greater familiarity with the construction business, are more involved, and comprehend the intricacy of dispute analysis [Riad et al., 1991]. An arbitration hearing is then scheduled at a time convenient to the arbitrator and the parties [Coulson, 1991]. Hearings are private, organized to facilitate the parties, and may not be disclosed to the public if not requested [Riad et al., 1991]. In arbitration proceedings, experts who are considered experts in their field are not needed as in courts [Trantina, 2003]. The attorneys for the parties offer the arbitrators with a variety of information, papers, testimony, or proof pieces. Arbitrations differ from litigation in that the arbitrators can accept all kinds of evidence, acceptance of evidence in cases is subject to strict rules [Currie and Robey 1988], [Tolle et al., 1990]. The arbitrators are fully authorized for the hearing and their decisions are binding on the parties. A court order is used to assist

the arbitration process and make the decision binding on both parties. Except in situations involving fraud, corruption, misuse of authority, violation of a party's rights, or suppression of evidence, it is unlikely that an arbitration ruling will be overturned [Heinsz, 2001].

Arbitration often seeks to ensure compliance with the law and the use of friendly language between the parties. Arbitration procedures are flexible and give the parties control over the selection of arbitrators [Mix, 1996]. Arbitration proceedings are case specific and take little time, giving this method an added advantage [Trantina, 2003].

Plaintiffs often prefer the arbitration forum for construction delays because expert analysis is done quickly, with less procedural and confidentiality [Riad et al., 1991].

There are several advantages in this method [Utama and Irsan, 2018]:

- i) Productivity speed, flexibility and lower costs,
- ii) Providing privacy,
- iii) The ability of the parties to choose the arbitrator and the session,
- iv) Applicable in international projects.

Arbitrations also have several advantages over litigation [Arditi and Patel, 1989]:

- i) It is quicker and reasonably priced.
- ii) Arbitrators can manage disputes quite well because they are experts with technical understanding, unlike judges and juries.
- iii) The parties may choose not to disclose information with the public, making the secrecy principle more legitimate.

One side may not have the opportunity to submit their case to a jury, which is the fundamental drawback of arbitration, and many supporters contend that arbitration is sometimes an unfriendly venue for their interests, particularly in issues concerning delay. In addition, the fact that the institutional interests of the parties are not adequately represented in the arbitrator lists can also create a disadvantage [Riad et al., 1991]. The two most prevalent forms of conflict resolution in the construction sector are arbitration and litigation [Treacy 1995].

The previous years, the process has started to turn into a much detailed, more expensive and less informal process. This means that arbitration loses many of its advantages over litigation [Stipanowich, 1997].

2.3.3. Negotiation

Through cooperative exploration of potential resolutions, two or more parties can come to a decision through negotiation [Rosenschein and Zlotkin 1994]. Negotiation is the simplest, most cost-effective, and quickest way to resolve disputes. Negotiation has been defined as the most effective method of resolution as it is easy and flexible to reach resolution in disputes [Al-Momani, 2000]. This approach is employed when the resulting claim has little bearing on the project's price tag and timeline [Riad et al., 1991]. Negotiation is a method that parties use before resorting to other dispute resolutions [Adolf, 2008]. Negotiation is a universal method of conflict resolution. During the solution, a fast and efficient result should be aimed by considering time management, costs and relations [Yiu and Cheung, 2004]. It is a voluntary method that can be used whenever, from the moment a dispute arises until it is still being litigated in the courts of appeal. This approach is often non-third party and can involve as many or as few participants as is required to obtain a conclusion [Utama and Irsan, 2018].

It is essential to select a negotiator who has the ability to reasonably consider key points in reaching agreement and conflict resolution. During the negotiation, the agreed points should be put in writing without wasting time, while they are still fresh in the minds, with a binding document. [Utama and Irsan, 2018].

The features that make this method preferable; since the decision maker is the parties themselves, confidentiality can be ensured, there are no official rules and the cost is cheap. An agreement can only be reached if all parties are willing to do so and have good faith. For this reason, if the positions of the parties with respect to each other are not equal, the process may be interrupted. This situation is shown as the negative feature of this method. [Adolf, 2008]. In the event that direct negotiations between the parties are unsuccessful, an alternate dispute resolution procedure, such as arbitration, mediation, or the use of Dispute Review Boards, is undertaken [Riad et al., 1991].

2.3.4. Mediation

The target of mediation is to facilitate direct negotiation between the parties in order to obtain a resolution. Structured negotiation, regarded as one of the most crucial ADR techniques, includes mediation [Murdoch and Hughes, 2007]. Mediation is an affordable, confidential and satisfying method [Gillie et al., 1991]. It is a non-binding type of negotiation when a third party is brought in to help [Utama and Irsan, 2018]. An impartial and active consultant listens to the views of the parties and then offers an overall solution by making suggestions, inviting the parties to focus on the issues in question. In addition, the consultant may conduct one-on-one meetings with the parties to clarify some points [Ashworth, 2012].

The initial step of mediation, during which the parties express their own perceptions, is the most crucial stage [Alaloul et al., 2019]. This method begins with the parties to the dispute presenting the contract documents and summaries describing their status to the consultant. The mediator conducts meetings with the parties or separately, approximately 2-3 days after the documents are submitted. In these meetings, the mediator informs the parties about the weaknesses of their cases [Riad et al., 1991].

Mediators do not have the authority to impose solutions, they can define and narrow down the problems, and convey the consequences of disagreement between the parties [Treacy, 1995]. Once the decision is written, it becomes binding for the parties [Tucker, 2005]. A mediator does not judge the dispute or defend one party's approach to the other. Instead, if the dispute is not resolved in this way, it talks about the risks of arbitration or courts, which is the destination, for the parties and leads the parties to a solution. If one of the parties does not find the other's position valuable and approaches the negotiation reluctantly, mediation breaks down. Parties willing to compromise should set aside the correctness of their arguments and aim to compromise [Mahamid, 2016]. In order for the parties to come to an agreement, it is crucial that the mediator has certain abilities, such as flexibility. Even though they might not be the ones making the decisions, a skillful mediator is much more than a messenger who relays suggestions from one group to another. The effectiveness of the mediator depends on the questions he/she poses to the parties, the doubts she raises, and her recommendations. If there is no goodwill and written agreement, this method will be ineffective and useless [Utama and Irsan, 2018].

Every conciliatory dispute resolution process requires the parties to understand and appreciate the other's position [Martin and Thompson, 2011]. Since the decision is not binding at the beginning, it is a method preferred by the parties. Parties who disagree with the decision may contest it in court or through arbitration [Bramble, 1987].

The parties split the expense of the mediation. Anytime the parties choose to do so. The work cannot be used in arbitration or litigation if the case is unsuccessful [Arditi and Patel, 1989]. In addition to resolving disputes relatively quickly, inexpensively and without confusion, mediation protects and strengthens the relationship between the two parties because it is based on good faith [Porkodi et al., 2020]. The use of this method has increased and become widespread due to contracts that develop mediation as a prerequisite for litigation [Utama and Irsan, 2018].

2.3.5. Other Methods

Since the conflicts in the construction projects affect the projects negatively in every aspect, many methods have been developed from the past to the present in order to resolve these disputes. Apart from the methods detailed here, there are alternative solution methods that are used less frequently. These methods can be listed as follows:

- i) Adjudication
- ii) Dispute Review Boards
- iii) Conciliation
- iv) Neutral Forum
- v) Mini Trial

2.4. Determination of Critical Success Factors in Claim Management

The goal of this study is to look into how CSFs are used in construction contracts for claims management. An extensive literature analysis was conducted to identify these parameters. When the literature research to determine the factors was completed, 44 factors were determined. The number of factors was finalized as 32 with the expert opinion for these determined factors and the approach that it would be more accurate

to synthesize some factors. Table 2.2 shows each factor developed along with the explanation and reference.

Table 2.2: Factors of claims management in construction contracts.

Number	Factor Name	Explanation	References
1	Adaptability to Changes	Understanding changes that are expected to occur within the parameters of the contract and the work schedule quickly and acting to adjust.	Chua et al. 1999; Butković 2021; Gunduz and Almuajebh 2020; Chan et al. 2004; Gudienė et al. 2013; Akintoye and McLeod 1997; Chen et and Chen 2007;
2	Adequacy of Plans and Specifications	The technical data are collected from the contract's annex drawings and specifications, which are full and have zero or very little inaccuracy.	Gunduz and Almuajebh 2020; Hamad et al. 2021; Chua et al. 1999.Hansen 2021; Damoah et al. 2022;
3	Clarity of Roles and Responsibilities	The need for everyone to work together at every level beginning with the design phase, improving the task distribution.	Sobieraj et al. 2021; Shayan et al. 2022; Chua et al. 1999; Banihashemi et al. 2017; Gudienė et al. 2013; Chen and Chen 2007; Damoah et al. 2022; Gunduz and Almuajebh 2020; Hamad et al. 2021; Butković 2021; Ola-awo et al. 2021; Cheng et al. 2000; Mavi et al. 2018; Yang et al. 2009; Chan et al. 2004.
4	Communication and Feedback	A quick response to changes and the ability to get timely, precise feedback are both essential for effective claims management.	Chan et al. 2004; Damoah et al. 2022; Tsiga et al. 2016; Sobieraj et al. 2021; Gunduz and Almuajebh 2020; Chen and Chen 2007; Hansen 2021; Hamad et al. 2021; Butković 2021; Ola-awo et al. 2021; Cheng et al. 2000; Alias et al. 2014; Qammaz et al. 2020; Shayan et al. 2022; Chua et al. 1999; Ingle and Mahesh 2020; Gudienė et al. 2013.
5	Conflict Resolution Capability	In the event that the parties' interests are not aligned, disagreements can be settled quickly and effectively.	Gunduz and Almuajebh 2020; Gudienė et al. 2013; Hansen 2021; Butković 2021; Ola-awo et al. 2021; Cheng et al. 2000; Tsiga et al. 2016; Chan et al. 2004.
6	Contractual Motivation and Incentives	Including advantageous components in the work scope that are compatible with everyone's interests within the parameters of the contract will improve people's excitement.	Gudienė et al. 2013; Hansen 2021; Qammaz et al. 2020; Chua et al. 1999.
7	Coordination and Collaboration	Avoiding potential flaws by ensuring that the management of the employees is managed and that each person and stakeholder who will contribute to the business is in harmony with one another.	Chan et al. 2004; Gudienė et al. 2013; Chen and Chen 2007; Wuniand Shen 2022; Butković 2021; Tsiga et al. 2016; Shayan et al. 2022; Yu and Shen 2015.
8	Cost Effectiveness	The project should not be interrupted for financial reasons, the cash flow should be managed in this manner, and the management's cost strategy established prior to the commencement of the work should be sustainable throughout the job.	Chan et al. 2004; Gunduz and Almuajebh 2020; Ingle and Mahesh. 2020; Chen and Chen 2007; Hamad et al. 2021; Butković 2021; Mavi et al. 2018; Sobieraj et al. 2021.

Table 2.2: continued.

9	Design Team Experience	Putting as little inaccuracy into the projects of the work as possible, fully planning them, and avoiding disputes between the parties throughout the work's execution.	Gunduz and Almuajebh2020; Wuniand Shen 2022; Hamad et al. 2021; Yu and Shen 2015; Chua et al. 1999.
10	Document Control	Beginning with the contract text and its appendices, creating all papers with clean content that complies with quality standards, filing them, and properly transferring them to the required units	Hansen 2021; Wuniand Shen 2022; Hamad et al. 2021; Shayan et al. 2022.
11	Economic Environment	In order to support the work, the construction industry needs a stable economic environment. This is one of the most significant consequences of external factors because it affects the economy during both input and output.	Chan et al. 2004; Gunduz and Almuajebh 2020; Ingle and Mahesh 2020; Gudienė et al. 2013; Butković 2021; Tsiga et al. 2016; Shayan et al. 2022; Chua et al. 1999.
12	Engagement of Stakeholders	Ensuring that all parties participating in the project are included in all decision-making processes from the planning stage through to project completion, hence preventing and/or swiftly resolving possible problems	Gunduz and Almuajebh 2020; Banihashemi et al. 2017; Hansen 2021; Wuniand Shen 2022; Ola-awo et al. 2021; Alias et al. 2014; Shayan et al. 2022; Yang et al. 2009; Chan et al. 2004.
13	Feedback Mechanism	Fast and unambiguous alerts are crucial in order to develop any necessary solutions, based on healthy communication and cooperation between employees and stakeholders.	Chan et al. 2004; Gunduz and Almuajebh 2020; Ingle and Mahesh 2020; Hansen 2021; Alias et al. 2014; Mavi et al. 2018.
14	Financial Stability	The financial stamina of the party handling the financial element is crucial for the project to be finished quickly and on schedule in accordance with the work schedule.	Gunduz and Almuajebh 2020; Ingle and Mahesh 2020; Gudienė et al. 2013; Chen and Chen 2007; Damoah et al. 2022; Hamad et al. 2021; Butković 2021; Sobieraj et al. 2021.
15	Management Support and Leadership	The manager[s] must possess strong leadership skills, be able to exercise authority with little restraint, and have high levels of empathy, honesty, fairness, and openness to new ideas. They must also manage disagreements well.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Chen and Chen 2007; Hansen 2021; Wuniand Shen 2022; Damoah et al. 2022; Hamad et al. 2021; Butković 2021; Gunasekera et al. 2018; Cheng et al. 2000; Alias et al. 2014; Tsiga et al. 2016; Mavi et al. 2018; Sobieraj et al. 2021; Shayan et al. 2022.
16	Mutual Trust and Confidence	Honest communication between all parties involved in the business contributes to the better development of all business processes.	Gudienė et al. 2013; Chen and Chen 2007; Ola-awo et al. 2021; Gunasekera et al. 2018; Cheng et al. 2000; Mavi et al. 2018; Chan et al. 2004.
17	Organizational Strategy	For the project to be completed as intended, proper planning of the executive staff that will be assembled at the start of the work and the additional assistance that will be required as work progresses is imperative.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Butković 2021; Shayan et al. 2022.
18	Planning and Control	The likelihood of success will be increased by the project managers' capacity to accurately plan using all available resources and to recognize the parallelism between execution and planning when the project is in operation.	Chan et al. 2004; Gunduz and Almuajebh 2020; Banihashemi et al. 2017; Gudienė et al. 2013; Hansen 2021; Damoah et al. 2022; Hamad et al. 2021; Butković 2021; Alias et al. 2014; Tsiga et al. 2016; Mavi et al. 2018; Sobieraj et al. 2021;

Table 2.2: continued.

			Qammaz et al. 2020; Chua et al. 1999.
19	Political Atmosphere	Government urban planning and economic development plans have an impact on the establishment and operation of businesses, regardless of whether the public or government is on either side of the firm.	Chan et al. 2004; Gunduz and Almuajebh 2020; Ingle and Mahesh 2020; Banihashemi et al. 2017; Gudienė et al. 2013; Damoah et al. 2022; Butković 2021; Tsiga et al. 2016; Mavi et al. 2018; Chua et al. 1999.
20	Problem Solving and Decision Making	Although it may seem like a skill that should be reserved for those in management, it is crucial for all current employees to be able to solve problems that arise during the course of their work quickly and effectively, as well as to make decisions within their purview without delay and with full consideration of all potential outcomes.	Gunduz and Almuajebh 2020; Gudienė et al. 2013; Hansen 2021; Hamad et al. 2021; Butković 2021; Tsiga et al. 2016; Yu and Shen 2015.
21	Project Complexity	Measures must be devised based on the project's numerous specifics.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Butković 2021; Tsiga et al. 2016; Mavi et al. 2018; Sobieraj et al. 2021; Qammaz et al. 2020.
22	Project Team Experience	The expertise of every person involved in every stage of the project will guarantee that human-induced errors are avoided and that any potential faults are immediately fixed.	Chan et al. 2004; Gunduz and Almuajebh 2020; Banihashemi et al. 2017; Gudienė et al. 2013; Wuniand Shen 2022; Damoah et al. 2022; Hamad et al. 2021; Butković 2021; Tsiga et al. 2016; Sobieraj et al. 2021; Qammaz et al. 2020; Shayan et al. 2022; Chua et al. 1999.
23	Quality program	Quality is regarded to be the third most essential component in projects after time and cost, so it is crucial to decide on the quality approach to be used before work begins and to adhere to it without wasting any time.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Chen and Chen 2007; Butković 2021.
24	Resource Availability	Throughout the project, it is important to make efficient use of both financial and human resources.	Gunduz and Almuajebh 2020; Gudienė et al. 2013; Chen and Chen 2007; Damoah et al. 2022; Butković 2021; Cheng et al. 2000; Alias et al. 2014; Mavi et al. 2018; Sobieraj et al. 2021; Shayan et al. 2022.
25	Risk Management	The risks that are anticipated to be encountered in advance must be assessed, controlled, and measured in order for the projects' strategic goals to be met.	Gunduz and Almuajebh 2020; Gudienė et al. 2013; Hansen 2021; Hamad et al. 2021; Butković 2021; Sobieraj et al. 2021; Shayan et al. 2022; Chua et al. 1999.
26	Safety Program Implementation	In all corporate sectors where the human aspect is a major factor, it is essential practice to set health and safety ahead of all other considerations.	Chan et al. 2004; Gunduz and Almuajebh 2020; Banihashemi et al. 2017; Gudienė et al. 2013; Hansen 2021; Hamad et al. 2021; Tsiga et al. 2016; Sobieraj et al. 2021.
27	Social and Physical Environment	The social and physical characteristics of the location where the work is done are crucial because they have a major impact on the human element. The physical environment must allow for the easy fulfillment of all conditions, and the social environment must be	Chan et al. 2004; Gudienė et al. 2013; Wuniand Shen 2022; Tsiga et al. 2016; Mavi et al. 2018.

Table 2.2: continued.

		composed of individuals who will cooperate with one another while working.	
28	Stakeholder Satisfaction	Building trusting relationships with all parties involved in the business and keeping them updated on the work's progress will guarantee that all parties will agree to the project's conclusion.	Ingle and Mahesh 2020; Banihashemi et al. 2017; Wuniand Shen 2022; Ola-awo et al. 2021; Cheng et al. 2000; Mavi et al. 2018; Qammaz et al. 2020.
29	Subcontractor Qualification	The qualifications of the firms to be chosen will be one of the most crucial factors in order to finish the job in line with its goal, particularly when the majority of the work in the project is outsourced to subcontractors.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Hansen 2021; Hamad et al. 2021; Tsiga et al. 2016.
30	Teamwork	Effectively utilizing the human aspect at every stage of the business process, whose reach is fairly broad; It is critical to assemble individuals whose personalities mesh well together, who can compensate for one another's shortcomings, and whose skills have been independently verified.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Chen and Chen 2007; Hansen 2021; Ola-awo et al. 2021; Alias et al. 2014; Tsiga et al. 2016; Mavi et al. 2018.
31	Technology Adoption and Innovation	It is essential to keep up with technical advancements, which are the main causes of the construction industry's rapid growth, and to adapt business practices accordingly.	Chan et al. 2004; Gudienė et al. 2013; Hansen 2021; Damoah et al. 2022; Butković 2021; Gunasekera et al. 2018; Sobieraj et al. 2021; Shayan et al. 2022.
32	Tendering and Procurement Method	At the very beginning of the job, it is important to decide on the tendering and procurement procedures that will work best for all the characteristics [cost, duration, employer qualification, resource kind, etc.] that may change based on the project's content.	Chan et al. 2004; Gunduz and Almuajebh 2020; Gudienė et al. 2013; Hansen 2021; Wuniand Shen 2022; Damoah et al. 2022; Butković 2021; Tsiga et al. 2016; Shayan et al. 2022.

3. RESEARCH METHODOLOGY

As stated in the prior division; as a result of a deep literature review, 44 factors were created in the first place. The number of factors that were simplified in consultation with industry experts was determined as 32. The naming and definitions of these factors were also mentioned in the prior division.

In order to ascertain the significance of the chosen criteria in the management of construction contracts claim success, a thorough survey was done. To better understand the participant profile, more questions were added to the survey's content.

The survey is divided into two divisions: extensive knowledge concerning the respondents and criteria that contribute to successful claims handling. Data on the respondents' demographics, including age, turnover rate, staff count, and number of years working in the construction business, were collected in the first section. Questions about the success criteria in claims management are included in the second section. A 5-point Likert scale was used to score the success elements in the second section, with 1 denoting very unsuccessful and 5 denoting highly successful.

The companies conducting particularly substantial projects in the Turkish construction industry were targeted by the survey. 40 Turkish construction companies are listed among the Top 225 International Contractors in 2021 by Engineering-News Record [ENR], representing a significant amount of activity and annual revenue. [ENR, 2022].

A total of 300 surveys were distributed, and 73 answers—or a answer rate of 24.33%—were obtained. The SPSS 25 Factor Analysis program was used to examine the survey data. The underlying elements that are evaluated by a much higher number of observable variables were found using the factor analysis. The following sections offer an analysis of the data gathered during the questionnaire.

4. FINDINGS

Section I. General Knowledge about the Respondents

In the initial section of the survey, questions were asked about the characteristics of the participants. Table 4.1 shows that the typical firm is 25 years old. It has been noted that about 30% of participants work for businesses having this experience.

Table 4.1: Firms experience periods.

Age of the companies of the participants	Frequency	Percent
0-10 Years	8	11.0
10-20 Years	22	30.1
20-30 Years	19	26.0
30-40 Years	16	21.9
40-50 Years	2	2.7
>50 Years	6	8.2
Total	73	100.0

Table 4.2, which shows the other characteristics of the participants, includes information on the average age, number of employees and annual turnover. The responding companies reported an average yearly turnover of US\$1,798.75 million, with a maximum turnover of US\$100 billion and a minimum turnover of US\$0.5 million. The average number of employees was noticed as 6,955.7, with a maximum and minimum of 80,000 and 15 respectively.

Table 4.2: Other characteristics.

Characteristic	Maximum	Minimum	Average	Median
Age of the Participants	65	25	42.01	40
Annual Turnover [million USD]	100,000.00	0.50	1,798.75	12
Number of Employees	80,000.00	15	6,955.70	600

The first part of the survey includes annual turnover, area of operation and experience period, as well as area of expertise of the companies participating in the survey. The bulk of the enterprises, as shown in Figure 4.1, have experience in building and residential construction, while the remaining ones have more expertise in

infrastructure, transportation, and industrial sectors. Water constructions only account for a little part of experience.

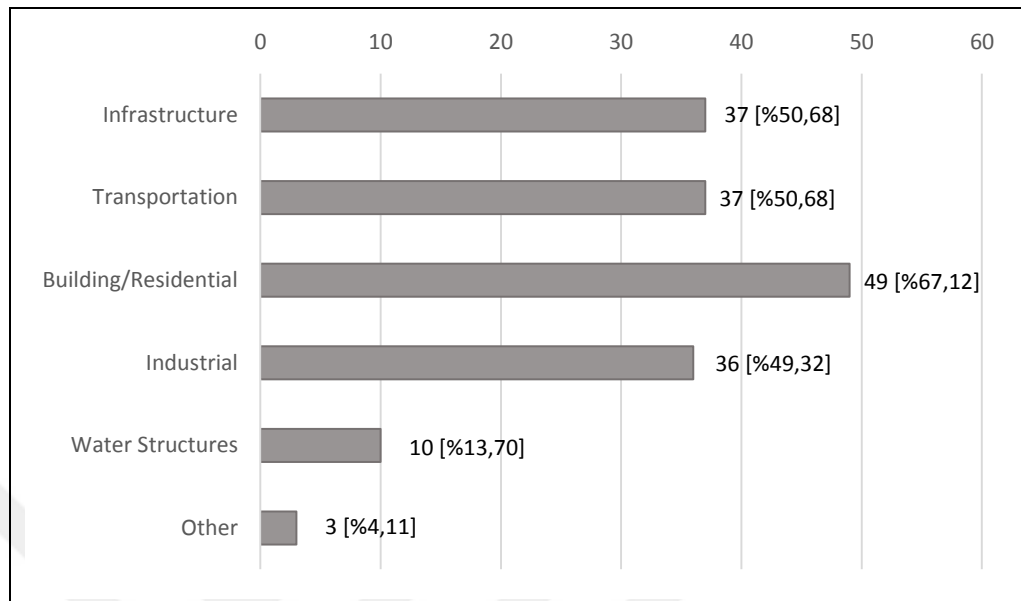


Figure 4.1. Area of expertise of the responding firms.

Section II. Success Factors in Claims Management

Claims management is difficult for a variety of reasons, including ambiguous roles and responsibilities, inability to involve stakeholders, and a lack of communication and feedback. More attention needs to be placed on enhancing claims management procedures in light of how they affect project performance. This necessitates a rigorous evaluation of the fundamental components of effective claims management procedures. This study pinpoints a number of key success factors [CSFs] for efficient claims handling procedures. Through examination of the comprehensive literature research and interviews with contract and project managers, the CSFs were found.

The interviewees were identified using the stratified sample method. Six experts in total, four of whom are contract managers and two of whom are project managers, were chosen for the interviews. The requirement for inclusion was to have project management and construction contracting expertise spanning at least 10 years. Each interview took place online and lasted for 20 minutes. 44 factors were identified in the first round, but the final list, which took into account the opinions of experts in the interviews, only contained 32 variables. The relevance of the elements as determined by the survey respondents is shown in Table 4.3. According to Table 4.3, the

respondents considered managerial support and leadership, conflict resolution skills, and communication and feedback to be the most crucial characteristics.

Table 4.3: Factor importance level ranking by average ratings.

Factor Code	Average Rating
V4	4.29
V5	4.27
V15	4.23
V6	4.16
V16	4.16
V7	4.11
V18	4.11
V3	4.08
V2	3.97
V1	3.92
V12	3.92
V30	3.92
V13	3.89
V29	3.85
V14	3.84
V28	3.82
V10	3.81
V20	3.81
V8	3.77
V17	3.74
V22	3.73
V25	3.67
V24	3.64
V31	3.62
V9	3.56
V32	3.53
V11	3.48
V23	3.41
V21	3.40

Table 4.3: continued.

V27	3.29
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The factor analysis method was used in the second phase to identify the fundamental elements of claims management. A multivariate statistical technique known as factor analysis can be used to identify associated variables as well as some independent factors that represent a combination of the original variables [Kleinbaum et al., 2013]. By illustrating the relationships between a set of associated variables, the factor analysis, also known as factor extraction, aids in the grouping of the variables into a meaningful and much reduced number of factors. There are two types of factor analysis: confirmatory factor analysis [CFA] and exploratory factor analysis [EFA]. EFA is performed by selecting a group of variables that maximizes the desired amount of variance. CFA prefers to evaluate the elements based on an a priori hypothesis, which shows that the theory is primarily what is driving the evaluation of the components. In order to determine the determinants for claims management, this study uses the EFA. In this regard, the Kaiser-Meyer-Olkin [KMO] and Bartlett's tests for sphericity were initially used to determine the adequacy of the data. The KMO test displays the sampling adequacy with values ranging from 0 to 1, showing the degree of error-free prediction of one variable by other variables. Higher test results indicate that the factor analysis is more likely to create factors that are more trustworthy and distinct. According to the scale established by Hair et al. [2006], KMO test results greater than 0.5 are considered acceptable, while those between 0.5 and 0.7 are deemed mediocre, and those between 0.7 and 0.8 are deemed good. The correlation matrix is put through Bartlett's test to see if it's an identity matrix [Field, 2013]. In this investigation, the KMO statistic was determined to be 0.906. This result demonstrates that the dataset can be used for factor analysis. The Chi-square value for the Bartlett's test was 2561.501, and the level of significance was determined to be low [p 0.0005]. [Field, 2005]. The factor analysis is a suitable method for the dataset, according to these values. The SPSS 25 program was used to carry out the factor analysis. Multiple files, including a correlation matrix, total variance, component matrix, rotated component matrix, and component plot in rotated space, were produced by the analysis.

component matrix, and component plot in rotated space, were produced by the analysis.

The correlation matrix's determinant value aids in evaluating the singularity effect. For determinant values bigger than 0.00001, it is assumed that there is no singularity impact [Teo and Feng, 2009]. Additionally, there is no longer any need to remove any variables from the defined list of variables. The entire variation explained by a group of factors is displayed in the correlation matrix. The goal of the factor analysis is to identify the optimum number of components that can account for a sizable proportion of the variance. The matrix's dimension was reduced as a result of the substantial intercorrelations between some of the variables.

The total variance explained by components is shown in Table 4.4. Based on the initial Eigenvalues, variance, and cumulative variance, the components are displayed. The table demonstrates that the components with Eigenvalues larger than 1 account for a significant percentage of the variation, or 74.798% of the overall variance. Based on the values supplied in the literature, this amount is appropriate for the analysis [Teo and Feng, 2009]. Hence, for the analysis, a total of four components were looked into.

Table 4.4: Total variance explained by components.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19,652	61,413	61,413	19,652	61,413	61,413	8,265	25,829	25,829
2	1,776	5,551	66,964	1,776	5,551	66,964	5,500	17,189	43,018
3	1,348	4,212	71,176	1,348	4,212	71,176	5,225	16,328	59,346
4	1,159	3,622	74,798	1,159	3,622	74,798	4,945	15,452	

Note: Extraction Method: Principal Component Analysis.

The rotated components matrix, which was produced using the Varimax rotation technique, is displayed in Table 4.5. There are four groups of variables in the matrix. "Human-related factors" is the name of the first common group, which accounts for 61.413% of the overall variation. This element is consistent with the elements influencing the efficiency of claims management in building contracts. Organizational factors, the second prevalent group, account for 5.551% of the overall variance. "Project-related factors" make up the third common group and account for 4.212% of the overall variance. Resources-related factors make up the fourth common

factor group, accounting for 3.622% of the overall variation. The factor loadings of the variables are represented by the values in bold in the rotated component matrix.

Table 4.5: Rotated component matrix.

Common Factor	Variable	1	2	3	4
1. Human Related Factors	Communication and Feedback	0.826	0.168	0.217	0.232
	Conflict Resolution Capability	0.726	0.292	0.387	0.179
	Mutual Trust and Confidence	0.719	0.501	0.146	0.214
	Clarity of Roles and Responsibilities	0.708	0.037	0.238	0.420
2. Organizational Factors	Political Atmosphere	0.070	0.770	0.297	0.098
	Problem Solving and Decision Making	0.406	0.729	0.326	0.165
	Financial Stability	0.136	0.633	0.400	0.292
	Engagement of Stakeholders	0.438	0.632	0.181	0.302
3. Project Related Factors	Project Team Experience	0.348	0.280	0.675	0.367
	Project Complexity	0.337	0.370	0.660	0.209
	Safety Program Implementation	0.147	0.366	0.646	0.437
	Social and Physical Environment	0.307	0.417	0.592	0.434
4. Resource Related Factors	Economic Environment	0.221	0.403	0.201	0.714
	Cost Effectiveness	0.472	0.129	0.224	0.690
	Document Control	0.311	0.406	0.199	0.635
	Design Team Experience	0.287	0.111	0.416	0.610
	Quality program	0.340	0.301	0.511	0.588

Note: Rotation method: Varimax with Kaiser Normalization.

The Human-Related Factors group constitutes 61.413% of the total variance as presented on Table 4.4. With factor loadings of 0.826, 0.726, 0.719, and 0.708, respectively, it was determined that communication and feedback [average rating: 4.29], conflict resolution ability [4.27], mutual trust and confidence [4.16], and clarity

of roles and responsibilities [4.08] were the most significant variables in this factor group (Table 4.5).

According to 82.19% of survey respondents, effective claims management in construction contracts depends on clear roles and responsibilities, effective communication and feedback, the ability to resolve conflicts, and mutual trust and confidence.

The Organizational Factors group constitutes 5.551% of the total variance as shown in Table 4.4. Political atmosphere [3.30], problem solving and decision making [3.81], financial stability [3.84], and engagement of stakeholders [3.92] were found to be the most significant variables of this factor group with factor loadings of 0.770, 0.729, 0.633, and 0.632 (Table 4.5).

The Project Related Factor group constitutes 4.212% of the total variance as shown in Table 4.4. Project team experience [3.73], project complexity [3.40], safety program implementation [3.40], and social and physical environment [3.29] were found to be the most significant variables for this factor group with factor loadings of 0.675, 0.660, 0.646, and 0.592 (Table 4.5).

The Resource Related Factors group constitutes 3.622% of the total variance (Table 4.4). Economic environment [3.48], cost effectiveness [3.77], document control [3.81], design team experience [3.56], quality program [3.41] were found to be the most significant factors in this component with factor loadings of 0.714, 0.690, 0.635, 0.610, and 0.588 (Table 4.5).

5. DISCUSSIONS

It is possible to encounter claims at every stage of construction projects, which have become increasingly large and complex in recent years. Since these emerging claims will affect the projects in every way, successful management of the claims will mean the successful completion of the project. Sector companies that are aware of the situation support the work for claims management, include people who will carry out this management, and now make room for this issue in the field of project management. The aim of this study is to determine the critical success factors that affect claim management. The factors determined by a deep literature review for this purpose have been simplified by the evaluation of industry experts. These experts were preferred by contracting department experts, who have been given claims management authority in many companies, and an accurate assessment has been made.

In order to examine the effects of the determined factors on the success of claim management, a survey was conducted with the sector employees. In order to understand the profile of the respondents, questions about the participant profile were asked in the first part. The questions asked about the age, experience and the characteristics of the companies they worked with, and the relevance of the people to the subject, the duration of the companies in the sector, and their budgets were evaluated. It has been determined that the existence of the companies that the participants work for in the sector is sufficient to meet the issue of claims management. In addition, considering the average age of the participants, it was determined that the years in which the construction industry developed in our country were caught. The size of the companies' annual business volumes is also considered as a sign that these companies do large amounts of work that needs to be taken care of in terms of claims management. Again, the average of the number of employees is a sign that the companies and their employees, for which the management of the project is very important, have been reached.

It has been determined that the majority of the companies that participated in the survey, the projects they are interested in do not require a single area of expertise and that this fact will be as diverse as possible. It has been realized that these areas of expertise are the superstructure projects that the construction sector, which has become the locomotive of the economy, has successfully carried out both at home and abroad.

Infrastructure, water structures and other projects, which were carried out in fewer numbers and on a budget, were left behind.

The effects and importance levels of the 32 factors determined were evaluated separately on the questionnaire using a 5-point Likert scale. In the ranking made according to the degree of importance, the factors that come at the top are communication and feedback, conflict resolution capability and management support and leadership. It is not unexpected that the most important factor that will affect success in claims management is based on communication. Although the number of stakeholders and employees varies depending on the size of the projects, communication is critical for a business that involves the interaction of many people from the very beginning. Effective communication of the parties with each other can prevent possible conflicts from the very beginning. In case of any dispute, the effective communication skills of the parties ensure that the solution is found faster and the project is affected as little as possible.

The conflict resolution capability factor that comes after effective communication is directly related to the next factor, management support and leadership. The solution of the disputes experienced is mostly resolved between the managers of the parties. For this reason, having a management team with high leadership and problem-solving capacity is essential for successful claim management. In the ranking made according to the degree of importance in claims management, the factors remaining in the bottom line are listed as social and physical environment, political atmosphere, safety program implementation and project complexity. In projects with good management, the impact of these factors on project success is negligible. According to Enshassi et al. [2009], poor negotiating abilities can make it difficult for a contractor to persuade a client to accept their bid, which in turn leads to disputes. In order to prevent possible claims, the study underlined the significance of dispute resolution skills. According to El-Saboni et al. [2009], efficient utilization of electronic communication technologies and their alleged advantages for claims management ultimately results in greater project success. Furthermore, Bakhary et al. [2015] pointed out that a lack of feedback and poor communication are hindering the detection and notification of claims. According to Enshassi et al. [2009], senior management support and leadership have a crucial influence in cost performance, which has an impact on claims management in projects. Given this context, it is clear

that the respondents gave high scores to the characteristics that are consistent with the findings of other studies.

EFA factor analysis method, which is more suitable for the scope of the research, was selected from the CFA based on the a priori hypothesis. In order to retain the data set with the maximum variance in high-dimensional data, principal component analysis, a technique, was employed. It proves that components with an eigenvalue greater than 1 account for approximately 75% of the total variance, which explains most of the variance. In accordance with the values listed in the literature, this amount is suitable for analyses. For analysis, four components were used.

The components matrix rotated using the Varimax rotation method was formed from 4 groups. The groups were named as human-related factors, organizational factors, project-related factors and resource-related factors respectively, according to their variance rates. Communication and feedback, the ability to resolve conflicts amicably, mutual trust and confidence, and the definition of roles and responsibilities are the factors in group human-related factors. The factors that come in the first two ranks are also the prominent factors in the ranking made according to the degree of importance. These factors, which are related to people, were seen as a success factor by the majority of the participants. This is not surprising since the most important factor in ensuring success is the human factor. According to Shaikh et al. [2020], a payment delay is one of the major reasons for claims, followed by poor project management and a lack of communication. Alaloul et al. [2019] emphasized the significance of shared confidence and trust, particularly in the mediation process, which is an effective method of resolving disagreements. According to Aibinu [2009], the success of contract pre-negotiation increases when there is a shared knowledge of similar expectations. This could also mean that defined roles and responsibilities result in improved negotiating abilities, which in turn aid claim avoidance.

The success factors listed in the second group are as follows: political atmosphere, problem solving and decision making, financial stability and engagement of stakeholders. It is surprising that the political atmosphere takes place in this group, which is classified as organizational. This factor is a factor that may become important for success depending on the parties of the project. This effect can be taken into account, especially in domestic projects, where one of the parties is a public administration. According to Mok et al. [2015], stakeholders have the capacity to increase project managers' focus in order to substantiate claims and affect project

outcomes. This demonstrates how important it is to have a strong stakeholder management strategy in order to satisfy their wants and expectations and deal with fewer disputes. Furthermore, according to Chaphalkar and Patil [2012], decision support systems speed up the resolution of disputes and, to some extent, can be used to avert litigation. According to Elhag et al. [2020], price-based competitive tendering processes are common in the construction industry's traditional procurement methods. However, they underlined that the choice of procurement methods has a number of drawbacks, including deteriorated stakeholder relations brought on by disagreements over contract variation. In this regard, claims are frequently seen with traditional procurement techniques, which places a significant strain on the project. Before beginning a project, construction projects should be evaluated for financial viability, according to Ingle and Mahesh [2020]. This will lessen the possibility that the claims will materialize. Given this context, it is possible to argue that organizational elements like stakeholder participation, problem-solving, and decision-making are very helpful in litigation and conflict settlement.

The project team's experience, the project's complexity, the implementation of the safety program, and the social and physical surroundings were all included in the group that the project-related aspects were categorized under. According to Nikoli and Ceri [2022], as one of the construction complexity factors, the culture of claims is assessed under the categories of legal and socio-political complexity. In a case study conducted by Mohamed et al. [2014], it was revealed that the reworks, unqualified collaboration, lack of knowledge for specific activities that needed to be built, and late supply of materials are the main causes of project delays. Due to the increase of time, this delay led to a claim between the owner and the contractor. The study by Kartamet et al. [2000] found that larger organizations with superior safety procedures had fewer claims, highlighting the need of efficient safety programs. According to Xu et al. [2014].s study, owners who used BIM reported fewer claims on their projects. Given this context, it is reasonable to conclude that project-related factors play a significant role in the efficiency of the claims management procedure in construction contracts.

The last group consists of factors based on the source of the project. These are economic environment, cost effectiveness, document control, design team experience and quality program. According to Banwo et al. [2015], the state of the economy has an impact on how well contracts handle claims. They imply that price variations are possible and that these are based on economic variables. They go on to say that it is

likely to have fluctuation claims where these fluctuations are negative. Additionally, Vidogah and Ndekugri [1998] pointed out that claim avoidance is likely to be caused by cost-effective computer tools. The significance of resources in a successful claims management process was underlined by Ali et al. [2020]. Due to a shortage of staff as human resources or the appropriate paperwork as a resource, the claims cannot be adequately addressed. A successful quality management program is expected to lessen the possibility of defect claims in construction, according to Rajendran et al. [2012]. A successful quality management program is expected to lessen the possibility of defect claims in construction, according to Rajendran et al. [2012]. Given this context, it is critical to keep in mind that the success of claims management in construction contracts depends heavily on financial resources and efficient cost and quality programs.

6. CONCLUSIONS AND RECOMMENDATIONS

The success elements influencing claims management in building contractors were examined in this study. In this regard, a collection of CSFs was created using semi-structured interviews and a thorough examination of the literature. Then, a survey was created and distributed to the construction industry professionals to rank the elements according to their level of relevance and the respondents' level of success in putting them into practice. Using SPSS 25, the elements were further divided into components. According to the survey's research, the ability of construction professionals to resolve conflicts, feedback and communication, management support, and leadership are the characteristics that have the biggest impacts on claims management in construction projects. Prior research has demonstrated that the ability to resolve conflicts amicably, clear communication, and top management support are necessary for claim avoidance.

According to the results of the factor analysis, the components that best account for variation are those that affect communication and feedback, conflict resolution skills, mutual confidence and trust, and role and responsibility clarity. Four components were found as a result of the factor analysis, reflecting the relative importance of various factors. These crucial aspects were divided into four areas based on the factor analysis: project-related, organizational, resource-related, and human-related factors. The findings of this study may help industry professionals and policymakers adjust and reevaluate current claims management practices. The results of the study may potentially inspire further investigation into the most crucial elements and the creation of conceptual claims management models. On the other hand, the study had some restrictions, including the size of the sample and the demographics of the survey respondents. If the study is carried out in a different area with a different sample size, the findings may vary. The study's conclusions are anticipated to provide general guidance for effective claims management, nevertheless.

As stated before, the project starts with the principle that there are no conflicts in the projects, but this is an unlikely assumption. No matter how well-prepared documents and a good team are available, conflicts are inevitable. For this reason, it is important for companies in the sector to include qualified personnel and to pay maximum attention to their document-based preparations. It will be to the benefit of the companies to have personnel trained in claims management in the contract units to

be established under the management area, and to ensure that these people take an active role during the execution of the work. These units are seen as unnecessary by most organizations and not given sufficient care. Thanks to contract managers who will perform effective claims management, disputes that cannot be prevented can be resolved in a shorter time, with the least possible cost and without sacrificing quality.

Within the scope of the study, the factors affecting the success of claims management were determined by classifying them. A new window has been opened for experts working in this field as literature.



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