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A study on the factors that influence delays in construction projects and how construction companies in Hargeisa are managing the situation

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Keywords

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Abstract

In recent years, there have been enormous development in the Somaliland construction sector, which have played significant role in the sustainability of the nation's economic and socio- economic activities. Nevertheless, a great number of the construction projects in Somaliland are often faced with problems of delay in completion, which in turn affect the performance, effectiveness and efficiency of the entire projects. As a consequence, this article offers the findings of a questionnaire study that sheds light on the major variables that impact building project delays, as well as how construction businesses are handling the problem in Hargeisa, Somaliland. In advance of developing the questionnaire, a thorough literature search was conducted to identify 51 significant delay causes, five consequences of delays, 12 early indications of delay, 13 methods for preventing delays, and 12 potential remedies to construction project delays. Structured questionnaires were then distributed to 61 stakeholders, including contractors, consultants, and customers from various building companies in Somaliland. The participant's data was handled, cleaned, and loaded into Excel worksheets before being analysed using statistical programmes such as SPSS Software and Microsoft Excel to compute the Cronbach's Alpha, Mean Values, and Relative Importance Index (RII) for reliability and for the purpose of ranking. The analysis revealed that the most vital factor, effect, early indicator, limiting measure, and possible solution to delays during construction are: the delay in honouring payment progressively (RII = 0.846), legal action or law suit (RII = 0.650), lack of project scope control/management (RII = 0.775), focusing on lessons from past experience (RII = 0.817), and scheduling contractors ahead of time (RII = 0.863), respectively.

The study's ramifications are also investigated prior to providing the necessary project administration strategies required to handle the recognised crucial elements and early indications of delay while implementing upcoming building projects in Hargeisa and Somaliland at large.

I. Introduction

The Construction has been a crucial necessity for people since the beginning of time, notably the urge to secure a place to live [1]. The first construction project known to humans was the construction of a home [2, 3], and construction projects quickly proceeded to the point that they required specialists and skilled labour [4]. In the past few years, there currently has occurred a surge in demand for public and private constructions in LDCs, highlighting the relevance of the construction business to these nations' socioeconomic progress [5]. It makes a consistent contribution to the Gross Domestic Product (GDP). As a result, building projects have largely resulted in significant economic and social advantages for the governments of these countries, as well as local and international contractors/developers and the general public [6].

Among other businesses, the building sector has particular features resulting from the unique structure of every building project [7]. These variables include the construction project's kind, its scope, geography, and workforce [7, 8]. As a result, implementing a project is intrinsically risky, and an absence of an effective approach to manage these hazards has resulted in a spate of negative outcomes while carrying out construction projects[9].

New construction approaches and projects are being developed to meet expanding human needs [10]. These consist of factories, healthcare facilities, roadways, hydroelectric dams, and other infrastructure. However, in the present day, construction projects are defined by their dangerous complexity and the extent to which project time and budget can be managed [11]. As a consequence, many partners are required to complete construction tasks they include investors, contractors, architects, consultants, and material producers. Participation of all partners in project implementation is a substantial challenge [12, 13]. Fortunately one of the key aims of project management is to execute a project inside a certain timeframe.

Most construction projects fail to reach their objectives due to flaws in their implementation methods, resulting in contractor and client disenchantment [14]. These efforts are usually beset by delays and cost overruns, resulting in a number of challenges with their implementation [15]. Projects should ideally operate on a regular basis with no delays [16]. However, construction delays are a few of the most significant challenges faced by the building business, influencing project delivery schedule, cost, and quality [17–19]. Until date, the industry has witnessed several of large projects miss project deadlines due to a failure to address construction delays [20].

Delays in the buildings sector are a global issue, and they are regarded as the most common [19, 21-23], costly, [23], hazardous, [24], and comprehensive concern associated with both government and private buildings [25]. This indicates that the postponed project will always have a negative influence on the contract's final outcome. Furthermore, the characteristics of variables that delay and their level of effect differ depending on the kind and duration (which can range from a few days to years) of projects [26]. Delays during construction are frequently linked to project mismanagement, which might have been avoided if an effective system of evaluating the related consequences had been applied [27]. A number of studies have also shown that by rigorously adopting project management practices, the concerns associated with building project delays may be significantly reduced [4]. As a consequence, one major factor leading to this problem is a lack of project management techniques for coping with these difficulties.

However, recent studies has revealed that, despite the use of diverse project administration systems, building projects in most nations, particularly in the least developed countries, continue to face the challenge of project delays [10]. In addition, the effects of building delays extend beyond those in the building industry. However, it has an influence on the overall economy of the countries involved [28].

Although many academics have looked at the impact of inefficiencies in public and private building projects in LDCs, as well as potential solutions for effective project delivery [29, 30], only a few of these studies have been undertaken in Somaliland, notably in Hargeisa. And, because Somaliland's construction sector is now expanding, there is a need to investigate the reasons of delays and assess their financial, environmental, and social implications on Hargeisa building projects. Within this framework, this paper investigates the current state of the Somaliland construction industry in terms of theory and practice about the postponement in the completion of construction projects in Hargeisa.

In least-developed nations such as Somaliland, the construction industry is critical to the growth and sustainability of the economy [31], and it has a substantial impact on all aspects of socioeconomic action in many countries throughout the world [31,32]. However, most of the construction projects in the least developing countries are faced with problems of delay in project completion [20, 33]. These are issues that influence the efficiency, efficacy, and performance of building initiatives, ultimately leading to the project(s) being abandoned by all parties involved [9]. Furthermore, the delays in construction project downshifts economic activities [33], diminish employment opportunities [34], and can discourage foreign investors [35, 36]. This is a fundamental challenge in the construction industry in Somaliland that motivated this study. To get a better understanding of the issue of building project delays, this study looks into the elements that cause delays and how construction businesses are dealing with the situation in Hargeisa.

The present research seeks to analyse the primary factors and indications of construction project delays in Hargeisa, as well as their influence on project life cycles. The specific research objectives include examining the influential factors contributing to construction delays, understanding the effects of these delays, exploring early indicators of such delays, investigating how construction companies in Hargeisa are managing this issue, and exploring potential solutions to mitigate construction project delays in the region. By addressing these objectives, this study will provide valuable insights into the challenges faced in construction projects in Hargeisa and suggest effective strategies to improve project timelines and overall efficiency.

II. Materials and Methods

A. Study area

This research was carried out from March to June 2022 in Hargeisa, Somaliland. It is located in the Maroodi Jeh area and serves as Somaliland's capital. Hargeisa is made up of five main districts. Its geographical location coordinates are 9.562389 latitude and 44.077011 longitude.

B. Population of the study

The research's target respondents include owners/clients, contractors, consultants, and other important participants in the construction sector. A total of 18 construction companies from both the public and private sectors in Hargeisa, Somaliland were identified and targeted for this study. However, stakeholders from only 15 companies were use as the target respondents in this study based on their willingness to participate in the research work (See Table.1). The target respondents comprise 61 respondents, including 25 contractors, 15 consultants, 10 clients, and 11 other significant participants in the construction business.

C. Study design

The descriptive survey approach is the best suited for this investigation. This decision is based on the design's potential to generate a highly representative sample, as well as the simplicity with which the researcher may collect comments from study participants [37].

D. Sampling method and sample size

The study's samples were selected using a simple random sampling procedure. This was done to guarantee that each target responder had an equal probability of being chosen as one of the samples to be studied. The sample size was 61 respondents. This was calculated using Krejcie and Morgan's table for estimating small-sample size from a given population. Details about the table may be found in Ref [38].

TABLE 1
LIST OF COMPANIES WHERE THE QUESTIONNAIRES WERE DISTRIBUTED AND THE SUMMARY OF THE NUMBERS OF RETURNED QUESTIONNAIRES

S/N	COMPANY NAMES	NUMBER OF QUESTIONNAIRES GIVEN OUT	RETURNED	PERCENTAGE
1	Daryel Construction Company	8	6	75%
2	Najah Construction Company	6	3	50%
3	Bameeco Construction Company	6	6	100%
4	Asad Construction Company	3	3	100%
5	Naruuro Construction & Consulting	4	4	100%
6	Loyan Engineering & Consulting	3	3	100%
7	Igman Decoration Company	6	3	50%
8	Hiraal Construction Company	3	2	67%
9	Almis Construction Company	3	3	100%
10	Bilan Construction Company	3	3	100%

11	Tayo-Kaab Contracting Company	1	1	100%
12	Batalale Construction Company	1	1	100%
13	Amal JV Company	3	2	67%
14	Somaliland Road Authority D.Agency	8	8	100%
15	Dahabshiil Bank Int'l Real State Department (DBR)	3	3	100%
Total		61	51	83.6%

E. Data collection tools

This study used two ways to obtain information: primary and secondary data collecting. Questionnaires were created and delivered to employees of selected private and public construction enterprises in Hargeisa to collect primary data. The emphasis was on obtaining first-hand information directly from the main sources to ensure reliable and accurate data. As for secondary data collection, it was used to support the findings and design of the questionnaire. This involved gathering information from various sources such as books, online journals, reports, school libraries, and published and unpublished articles. The use of both primary and secondary data gathering methods enabled a thorough examination and analysis in this paper [39].

F. Data analysis

Before analyzing the acquired data with statistical techniques, the questionnaire was processed, filtered, and put into excel. The data processing into the needed information was focused towards comprehending the meaning of the responses supplied in the completed surveys.

III. Results and Discussion

1.ANALYSIS OF THE FACTORS THATINFLUENCE CONSTRUCTION DELAYS

G. The Analysis of Delay Factors Related to Clients/Owners

Table 2 shows the findings of the survey study of delay causes involving clients/owners. In terms of the most significant client-related aspect, Table 2 demonstrates that gradually honouring payments (RII = 0.846) is the most favoured source of project delay, as viewed by respondents. Aside from that, the owner's change orders during construction (RII = 0.792) are rated second in this category, while inadequate communication and coordination with contracting partners (RII = 0.767) rank third. Although the factors that follow are rated as having a major impact on to construction delays: delay in the approval of sample materials (RII = 0.625), lack of complete documentation before the start of the project (RII = 0.642), and slow decision-making procedures (RII = 0.658), they are the least significant causes of delay related to the owner/clients.

TABLE 2
THE MEAN SCORE VALUE AND RII RANKING FOR CLIENTS/OWNERS-RELATED DELAY FACTORS

S/N	OWNER- RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Progressive payment delays.	**0.846**	**4.229**	1	Very high
2	Delays in project delivery at the site.	**0.742**	**3.708**	4	High
3	Slow decision-making process	**0.658**	**3.292**	9	High
4	Errors in design and specifications	**0.696**	**3.479**	7	High
5	Lateness in the revision and approval of design documents	**0.729**	**3.646**	5	High
6	Poor communication and coordination with contracting parties	**0.767**	**3.833**	3	High
7	Difficulties in accessing credit facilities (E.g. Loan)	**0.683**	**3.417**	8	High
8	Change orders during construction by owner	**0.792**	**3.958**	2	High
9	Conflicts between project joint- owners	**0.708**	**3.542**	6	High
10	Indefinite Suspension of work by owner	**0.696**	**3.479**	7	High
11	Lack of complete documentation before commencement of project	**0.642**	**3.208**	10	High
12	Delay in the approval of sample materials	**0.625**	**3.125**	11	High

H. Analysis of Delay Factors Related to Contractors

Table 3 shows that respondents identified an underestimate or overestimation of project costs (RII = 0.808), difficulties in project financing (RII = 0.783), and delays in sub-contractor work (RII = 0.779) as the top causes of contractor-related project delays. Respondents selected underestimating or overestimation of project cost (RII = 0.808) as the first most significant contractor-related cause of delay in Somaliland building projects, with a very high degree of participation.

Similar to the owner-related delay category, the three least significant sources of delayin the contractor-related segment contribute significantly to delays in construction. These include delays in workforce mobilisation (RII = 0.650), disagreements in subcontractor schedules during project execution (RII = 0.692), and construction defects (RII = 0.696), respectively

TABLE 3
THE MEAN SCORE VALUE AND RII RANKING FOR CLIENTS/OWNERS-RELATED DELAY FACTORS

S/N	OWNER- RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Delay in honoring payment progressively	**0.846**	**4.229**	1	Very high
2	Delay in the provision or delivery of project site	**0.742**	**3.708**	4	High
3	Slow decision-making process	**0.658**	**3.292**	9	High
4	Errors in design and specifications	**0.696**	**3.479**	7	High
5	Lateness in the revision and approval of design documents	**0.729**	**3.646**	5	High
6	Poor communication and coordination with contracting parties	**0.767**	**3.833**	3	High
7	Difficulties in accessing credit facilities (E.g. Loan)	**0.683**	**3.417**	8	High
8	Change orders during construction by owner	**0.792**	**3.958**	2	High
9	Conflicts between project joint-owners	**0.708**	**3.542**	6	High
10	Indefinite Suspension of work by owner	**0.696**	**3.479**	7	High
11	Lack of complete documentation before commencement of project	**0.642**	**3.208**	10	High
12	Delay in the approval of sample materials	**0.625**	**3.125**	11	High

I. Analysis of Delay Factors Related to Consultants

Table 4 shows the findings of a survey investigation of the elements that contribute to consultant delays. According to respondents, the three key delay factors related to consultants are a delay in the approval of major changes in the work scope (RII = 0.800), poor communication and coordination (RII = 0.767), and a lack of significant consultant experience (RII = 0.750). Significant influence to construction delays. These include the delay in instructions from consultants (RII = 0.671) and the consultant's back report (RII = 0.692).

TABLE 4
THE MEAN SCORE VALUE AND RII RANKING FOR CONSULTANTS-RELATED DELAY FACTORS

S/N	CONSULTANT- RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Delay in the approval of major changes in the work scope	**0.800**	**4**	1	Very high
2	Poor communication and coordination	**0.767**	**3.833**	2	High
3	Lack of significant experience of consultant	**0.750**	**3.75**	3	High
4	Mistakes and discrepancies in contract documents	**0.700**	**3.5**	6	High
5	Delays in creating design documents	**0.733**	**3.667**	4	High
6	Inadequate site survey and data collection before design	**0.713**	**3.563**	5	High
7	Delay in instructions from consultants	**0.671**	**3.354**	8	High
8	Back report of the consultant	**0.692**	**3.458**	7	High

J. Analysis of Delay Factors Related to Labors

Table 5 shows the findings of the survey study of labor-related delays. According to Table 5, a lack/shortage of labour (RII = 0.763) is the most commonly cited cause of project delay among respondents. Aside from that, a shortage of trained labour (RII = 0.742) is placed second in this category, with a labour strike (RII = 0.688) coming in third.

Despite the fact that they all contribute significantly to project delays, respondents selected personal disputes among labours (RII = 0.679) as the least important source of delay in the labor-related category.

As with the owner-related and contractor-related delay categories, the two elements with fewer important reasons of delay within the consultant-related category had

TABLE 5
THE MEAN SCORE VALUE AND RII RANKING FOR LABOR-RELATED DELAY FACTORS

S/N	LABOR-RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Lack/shortage of labors	**0.763**	**3.813**	1	High
2	Labor strike	**0.688**	**3.438**	3	High
3	Personal conflicts between labors	**0.679**	**3.396**	4	High
4	Lack of sufficient skilled labors	**0.742**	**3.708**	2	High

K. Analysis of Delay Factors Related to Materials

Table 6 shows that the two most influential delay factors linked to materials are increases/ fluctuations in material pricing (RII = 0.792) and materials procurement challenges (Lateness) (RII = 0.763), according to the relative significance index (RII). According to the respondents, increase/fluctuation in material prices is the first most significant materials-related cause of delay in construction projects in Somaliland, despite the fact that it has a high level of contribution to construction delay when compared to other categories with a very high level.

Similar to the other delay categories, the two least important causes of delay in the materials-related category contribute significantly to construction delays. These include damage to sorted supplies that are urgently needed (RII = 0.650) as well as modifications in material kinds during construction (RII = 0.708).

TABLE 6
THE MEAN SCORE VALUE AND RII RANKING FOR MATERIALS - RELATED DELAY FACTORS

S/N	MATERIALS- RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Materials procurement difficulties (Lateness)	**0.763**	**3.813**	2	High
2	Shortage/lack of materials in the market place	**0.758**	**3.792**	3	High
3	Increase/Fluctuation in the prices of materials	**0.792**	**3.958**	1	High
4	Delay in the delivery of materials	**0.738**	**3.688**	4	High
5	Changes in material types during construction	**0.708**	**3.542**	5	High
6	Damage of sorted materials that are needed urgently	**0.650**	**3.250**	6	High

L. Analysis of Delay Factors Related to Equipment

As indicated in table 7, the shortage/lack of equipment (RII = 0.767) is the most desired equipment-related delay factor in terms of influence to project delay. Aside from that, instrument breakdown/failure (RII = 0.721) is placed second in this category, followed by issues with equipment efficiency and effectiveness (RII = 0.704).

Considering the fact that they all make a considerable contribution to project delays, respondents identified a lack of equipment operator skills (RII = 0.696) as the least important cause of delay in the equipment category.

The Mean Score Value and RII rating for equipment-related delays

TABLE 7
THE MEAN SCORE VALUE AND RII RANKING FOR EQUIPMENT-RELATED DELAY FACTORS

S/N	EQUIPMENT- RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Shortage/lack of Equipment	**0.767**	**3.833**	1	High
2	Breakdown/Failure of equipment	**0.721**	**3.604**	2	High
3	Low level of equipment-operator's skills	**0.696**	**3.479**	4	High
4	Challenges with the efficiency and effectiveness of Equipment	**0.704**	**3.521**	3	High

M. Analysis of Delay Factors Related to External Factors

According to the respondents' points of view, the two most relevant delay reasons connected to external variables are unfavourable site circumstances (RII = 0.763) and changes in weather conditions (RII = 0.733). Similar to the other delay categories, the delay in obtaining licences (RII = 0.675), while the least contributing factor among the external factors-related delay factors, contributes significantly to building delays.

TABLE 8
THE MEAN SCORE VALUE AND RII RANKING FOR EXTERNAL FACTORS-RELATED DELAY FACTORS

S/N	EXTERNAL FACTORS-RELATED CAUSES OF DELAY	RII	Mean Value	RII & Mean Value Ranking	Level of Contribution to project delays
1	Unfavorable site conditions	**0.763**	**3.813**	1	High
2	Change in weather condition	**0.733**	**3.667**	2	High
3	Delay in securing permits	**0.675**	**3.375**	6	High
4	Occurrence of accident during construction	**0.725**	**3.625**	3	High
5	Introduction of new government policies, regulations, and laws	**0.708**	**3.542**	4	High
6	Delay in services provided by utility service providers	**0.696**	**3.479**	5	High

N. Ranking of the Ten Most Significant Factors that Causes Construction Delays

Table 9 ranks among the top ten major elements that cause delays in construction according to the opinions of the participants. It is worth noting that of the top 16 factors that made the top ten list of factors causing delays in construction projects in Hargeisa, four are related to contractors, nine are related to customers, consultants, and materials (three for each), while labor-related delay, equipment-related delay, and external factor-related delay are all shared the three remaining factors. The top ten reasons are: (1) delay in paying gradually (RII = 0.846), (2) underestimating or overestimation of the project cost (RII = 0.808), (3) delay in the approval of substantial modifications in the work scope (RII = 0.800), The following factors contributed to project delays: owner change orders (RII = 0.792), fluctuating material prices (RII = 0.792), errors in design and contract documents (RII = 0.800), delays in sub-contractor work (RII = 0.779), poor communication and coordination with contracting parties (RII = 0.767), equipment shortages (RII = 0.767) and underestimated project durations (RII = 0.763). Labour scarcity (RII = 0.763), material procurement issues (lateness) (RII = 0.763), and unfavourable site circumstances (RII = 0.763), (9) market shortfall/lack of materials (RII = 0.758), and (10) consultant lack of considerable expertise (RII = 0.750).

TABLE 9
RANKING OF THE TEN MOST SIGNIFICANT FACTORS THAT CAUSES CONSTRUCTION DELAYS

RII RANKING	TOP TEN SIGNIFICANT FACTORS	RII	Number of Factors	Category
1	Delay in honoring payment progressively	0.846	1	Owner- related
2	Underestimation or overestimation of the project cost	0.808	1	Contractor- related
3	Delay in the approval of major changes in the work scope	0.800	1	Consultant- related
4	Change orders during construction by owner Increase/Fluctuation in the prices of materials	0.792	2	Owner- related Materials-related
5	Difficulties in project financing	0.783	1	Contractor- related
6	Delays in sub- contractor's work	0.779	1	Contractor- related
7	Poor communication and coordination with contracting parties Poor communication and coordination Shortage/lack of equipment	0.767	3	Owner- related Consultant- related Equipment-related
8	Underestimation of the project durations Lack/shortage of Labors Materials procurement difficulties (Lateness) Unfavorable site conditions	0.763	4	Contractor- related Labor- related Materials- related External Factors
9	Shortage/lack of materials in the market place	0.758	1	Materials- related
10	Lack of significant experience of consultant	0.750	1	Consultant- related

2. ANALYSIS OF THE EFFECTS OF CONSTRUCTION DELAYS

Another specific goal of study is related to the identification of the effects of buildings delays. Five effects have been identified before detailing the findings of the study. These impacts are rated based on Relative Importance Index (RII) and Mean Values. Moreover, in order to establish the ranking of the different early indicators, the RII and Mean Values are measured based on the level of relevance.

Table 10 summarises the survey findings on the consequences of building delays in Hargeisa, Somaliland. According to the respondents, Table 10 shows that legal action or a lawsuit (RII = 0.650) has the most significant influence on construction delays. Furthermore, cost overrun (RII = 0.629) is regarded as the second most important consequence of development delays in Hargeisa, followed by outright abandonment (RII = 0.608). Table 10 further shows that the top three important consequences of construction delays have a high-medium degree of relevance. However, the degree of relevance (average) of

time overrun (RII = 0.583) and dispute/disagreement between parties (RII = 0.588) show that these are the two least important causes of building delays in Hargeisa, Somaliland. indicator in this category is when resources are not committed to the project (RII = 0.763). In addition, the second and third executive leadership-related early indicators are found to be when there is no sense of urgency (RII = 0.746) and lack of executive sponsorship and/or commitment to steering the project (RII = 0.683), respectively. The least preferred early indicator in the executive leadership-related category is found to be when there is no clear project business case and/or objective (RII = 0.658), in spite of the fact that the level of preference of this early indicator is rated high-median.

TABLE 10
THE MEAN SCORE VALUE AND RII RANKING OF THE EFFECTS OF CONSTRUCTION DELAYS IN SOMALILAND

S/ N	EFFECT OF DELAYS IN PROJECTS	RII	Mea n Val ue	RII & Mean Value Ranking	Importance Level
1	Time overrun	0.583	2.917	5	Average
2	Cost overrun	0.629	3.146	2	High- Median
3	Dispute/Disagreement between parties	0.588	2.938	4	Average
4	Complete abandonment	0.608	3.042	3	High- Median
5	Legal action or Law suit	0.650	3.25	1	High- Median

TABLE 11
THE MEAN SCORE VALUE AND RII RANKING OF THE EXECUTIVE LEADERSHIP-RELATED EARLY INDICATORS OF CONSTRUCTION DELAYS

S/ N	EARLY INDICATORS OF DELAY	RII	Mea n Value	Ranking	Level of Preference
1	When there is no sense of urgency	0.746	3.729	2	High- Median
2	When resources are not committed to the project	0.763	3.813	1	High- Median
3	When there is no clear project business case and/or objective	0.658	3.292	4	High- Median
4	Lack of executive sponsorship and/or commitment to steering the project	0.683	3.417	3	High- Median

3. ANALYSIS OF THE EARLY INDICATORS OF CONSTRUCTION DELAYS

The third particular goal of the study is to identify early signs of building delays. Before detailing the analysis's findings in the subsections below, 12 early indications were found and divided into two broad categories. These factors are sorted in each category according to their relative importance index (RII) and mean values. Furthermore, in order to determine the ordering of the various early indications, the RII and Mean Value are measured depending on the level of preference.

A. Analysis of Executive Leadership-Related Early Indicators of Construction Delays

Table 11 summarises the survey results on executive leadership-related early indications of construction delays. In terms of the most important leadership-related early indications, Table reveals that the recommended early

B. Analysis of Project Management-Related Early Indicators of Construction Delays

Table 12 shows the survey findings for the project management-related early indicators of construction delays. Table 12 shows that the absence of project scope control/management (RII = 0.775) is the most desired early signal in this area, according to respondents. Furthermore, the second, third, fourth and fifth project management-related early indicators are found to be no or little update on the tasks assigned to the team by project manager (RII = 0.758), when burn rate (effort) is slower than planned (RII = 0.754), lack of necessary planning (RII = 0.750), and delay in the execution of project plan (RII = 0.742), respectively. The least preferred early indicators in the project management-related category are found to be tasks slippage/declination/deterioration exceed beyond the threshold (Resource Bottleneck) (RII = 0.675), inconsistent change of resources (RII = 0.688), when burn rate (effort) is not proportional to percentage completion (underestimation of task) (RII = 0.729), respectively, despite the fact that the level of preference of this early indicator is rated high-median.

TABLE 12
THE MEAN SCORE VALUE AND RII RANKING OF THE PROJECT MANAGEMENT-RELATED EARLY INDICATORS OF CONSTRUCTION DELAYS

S/ N	EARLY INDICATORS OF DELAY	RII	Mea n Value	Ranking	Level of Preference
1	When burn rate (effort) is slower than planned	0.754	3.771	3	High- Median
2	When burn rate(effort) is not proportional to percentage completion (underestimation of task)	0.729	3.64 6	6	High- Median
3	No or little update on the tasks assigned to the team by project manager	0.758	3.792	2	High- Median
4	Tasks slippage/declination/deteriorat ion exceed beyond the threshold (Resource Bottleneck)	0.675	3.375	8	High- Median
5	Delay in the execution of Project plan	0.742	3.708	5	High- Median
6	Lack of necessary planning	0.750	3.75	4	High- Median
7	Lack of project scope control/management	0.775	3.875	1	High- Median
8	Inconsistent change of resources	0.688	3.438	7	High- Median

C. Overall Analysis of the Early Indicators of Construction Delays

The study's aims include identifying, evaluating, and categorising the early signs of construction project delays in the Somaliland construction sector into two key groups: executive leadership and project management. The most important early indications of building project delays in Somaliland were assessed using the RII ranking of the 12 identified early indicators. Table 13 summarises the findings from the overall survey study of the 12 early indications of building delays. Based on mean value and RII rankings. As shown in Table 13, the RII ranking (or mean value) ranges from 1 to 12, implying that the 12 early indicators investigated in this study fall within these ranks. Furthermore, Table 13 shows that the lack of project scope control/management (RII = 0.775) is the most preferred early indicator in general and in the project management category, whereas "when resources are not committed to the project" (RII = 0.746) is the most preferred in its category but the second most preferred overall. Table 13 also shows that four of the top five significant early indicators of construction delays in Hargeisa are related to project management, and the remaining one is related to executive. Also, Table 13 reveals that of the three early indicators of construction delays, two falls under the executive leadership category while the third early indicator is related to the project management category.

TABLE 13
THE OVERALL MEAN SCORE VALUE AND RII RANKING OF THE EARLY INDICATORS OF CONSTRUCTION DELAYS

S/ N	EARLY INDICATORS OF DELAY	RI I	Mean Value	RII & Mean Value Ranking		Level of Significance
				Category	Overa ll	
1	When there is no sense of urgency	0.746	3.729	2	6	High- Median
2	When resources are not committed to the project	0.763	3.813	1	2	High- Median
3	When there is no clear project business case and/or objective	0.658	3.292	4	12	High- Median
4	Lack of executive sponsorship and/or commitment to steering the project	0.683	3.417	3	10	High- Median
5	When burn rate (effort) is slower than planned	0.754	3.771	3	4	High- Median
6	When burn rate(effort) is not proportional to percentage completion (underestimation of task)	0.729	3.646	6	8	High- Median
7	No or little update on the tasks assigned to the team by project manager	0.758	3.792	2	3	High- Median

8	Tasks slippage/declination /deterioration exceed beyond the threshold (Resource Bottleneck)	0.675	3.375	8	11	High- Median
9	Delay in the execution of Project plan	0.742	3.708	5	7	High- Median
10	Lack of necessary planning	0.750	3.75	4	5	High- Median
11	Lack of project scope control/management	0.775	3.875	1	1	High- Median
12	Inconsistent change of resources	0.688	3.438	7	9	High- Median

4. ANALYSIS OF THE WAYS CONSTRUCTION COMPANIES ARE MANAGING CONSTRUCTION DELAYS

The fourth particular purpose of the study is to identify how construction businesses manage project delays. 13 approaches were found, analysed, and graded using the Relative Importance Index (RII) and Mean Values. Furthermore, in order to rate the various ways in which construction businesses manage project delays in Hargeisa, the RII and Mean Value are evaluated based on their efficacy.

Table 14 shows the findings of a survey study on how construction businesses manage construction delays. According to the respondents, Table 14 shows that concentrating on lessons from previous experience (RII = 0.817) is the most successful strategy to manage construction project delays in Hargeisa. Furthermore, the second, third, and fourth most effective methods of managing delays are found to be setting adequate and realistic construction durations (RII = 0.813), timely and appropriate project planning and development (RII = 0.808), appropriate use of construction procedures (RII = 0.808), timely and proper design (RII = 0.804), and adequate site management and supervision. These are the six most successful methods that construction businesses in Hargeisa manage construction delays. According to the respondents, the other seven methods of controlling construction delays are seen as extremely successful. Despite their positive effects, the following are regarded as the least effective methods of managing construction delays: reliable and precise initial cost estimates (RII = 0.725), productive and tactical planning (RII = 0.729), and proper use of modern construction technologies and equipment (RII = 0.738), respectively.

TABLE 14
THE MEAN SCORE VALUE AND RII RANKING OF THE METHODS CONSTRUCTION COMPANIES ARE MANAGING CONSTRUCTION DELAYS IN HARGEISA.

S/ N	WAYS OF MANAGIN G CONSTRUC TION DELAYS	RII	Mean Value	RII & Mean Value Ranking	Level of Effectiveness
1	Focusing on lessons from past experience	0.8 17	4.0 83	1	Extremely Highly
2	Timely and appropriate project planning and development	0.8 08	4.0 42	3	Extremely Highly
3	Timely and proper design	0.8 04	4.0 21	4	Extremely Highly
4	Adequate site management and supervision	0.8 04	4.0 21	4	Extremely Highly
5	All parties working collaborativel y throughout the project lifecycle	0.7 42	3.7 08	8	Highly
6	Setting of adequate and realistic construction durations	0.8 13	4.0 63	2	Extremely Highly
7	Proper Utilization of modern construction technologies and equipment	0.7 38	3.6 88	9	Highly
8	Appropriate use of construction procedures	0.8 08	4.0 42	3	Extremely Highly
9	Productive and tactical planning	0.7 29	3.6 46	10	Highly
10	Appropriate material procurement	0.7 63	3.8 13	5	Highly
11	Reliable and precise initial cost estimates	0.7 25	3.6 25	11	Highly
12	Appropriate material procurement	0.7 58	3.7 92	6	Highly
13	Progressive meeting schedules	0.7 54	3.7 71	7	Highly

5. ANALYSIS OF THE POSSIBLE SOLUTIONS TO THE PROBLEM OF CONSTRUCTION DELAY

The fifth and last particular purpose of the study is to identify a potential solution to the problem of construction delays. Before analysing the analytic results, 12 viable solutions were identified. These probable solutions are sorted according to the Relative Importance Index (RII) and Mean Values. Furthermore, in order to rank potential solutions to the difficulty of building delays, the RII and Mean Values are weighted according to their relevance.

Table 15 shows the survey findings for potential remedies to the building delay problem. According to Table 15, respondents believe that scheduling contractors ahead of time (RII = 0.863) is the most important approach for reducing construction delays. Following extensive planning and attention to detail: plan, review plan, and continuously update plan (RII = 0.858), applying value-engineering as a management tool for project execution (RII = 0.833), assigning clear and comprehensive roles and responsibilities from the start of the project (RII = 0.817), Using construction project management software to streamline project plans (e.g., Genie Belt, eSUB, Open Workbench, Opendocman, etc.) (RII = 0.813), ensuring that contractor proven competency is considered during builder/contractor procurement rather than the lowest bid/tender (RII = 0.808), and improving management methods used throughout the project lifecycle (RII = 0.804), in the second, third, fourth, fifth, sixth, and seventh rank positions, respectively.

These seven potential solutions are extremely important in terms of their ability to reduce building delays in Hargeisa. The respondents believe the other five have a high-median degree of relevance. Despite their good effects, the following are regarded as the least likely solutions to the problem of building delays: Implementing construction management (CM) and design-build standard forms of contract (RII = 0.750), establishing clear risk allocation between parties in construction projects (RII = 0.767), and ensuring early purchases to address material price appreciation/increase (RII = 0.771), respectively.

TABLE 15
THE MEAN SCORE VALUE AND RII RANKING OF THE POSSIBLE SOLUTIONS TO THE PROBLEM OF CONSTRUCTION DELAY

S/N	POSSIBLE SOLUTIONS TO CONSTRUCTION DELAYS	RII	Mean Value	RII & Mean Value Ranking	Level of Importance
1	Extensive Planning and Attention to Detail: Plan, Review plan and continuously update plan	0.858	4.292	2	High
2	Using construction project management software to streamline project plans (E.g. Genie Belt, eSUB, Open Workbench, Opendocman etc.)	0.813	4.063	5	High
3	Establishing clear risk allocation between parties in construction projects	0.767	3.833	11	High- Median

4	Applying value- engineering as a management tool for project execution	0.833	4.167	3	High
5	Implementing construction management (CM) and design-build standard forms of contract	0.750	3.75	12	High- Median
6	Establishing a detailed case-by-case pre-contract appreciation and insertion of escalation and fluctuations special clauses to address uncertainty	0.788	3.938	8	High- Median
7	Ensuring that during the procurement of builder/contractor, the contractor proven competency is considered rather than lowest bid/tender	0.808	4.042	6	High
8	Ensuring the early purchase are done to address material price appreciation/increase	0.771	3.854	10	High- Median
9	Improving the management methods used throughout the project lifecycle	0.804	4.021	7	High
10	Assigning clear and comprehensive roles and responsibilities from the start of the project	0.817	4.083	4	High
11	Scheduling contractors in advance	0.863	4.313	1	High
12	Establishing clear and consistent communication among all parties	0.779	3.896	9	High- Median

Discussion and Conclusion

The consequences of these findings are rather substantial. First, the findings indicate that numerous key variables contribute to building project delays in Somaliland. Among the 51 factors investigated in this study, respondents selected payment delay as the most significant factor contributing to construction project delays. This is hardly surprising given that the Somaliland building sector is primarily controlled by a few affluent individuals. Furthermore, this conclusion is consistent with Duodu's [40] results, which listed payment delay as one of the most influential factors of building project delay in Bia West District, Ghana. Fugar and Agyakwah-Baah [41] identified this problem as one of the leading causes of building project delays in Ghana. According to Shi et al. [42], if payments are not correctly managed, this might result in cost overruns in building projects. To solve this issue, Somaliland contractual parties should make efforts to employ project management tools such as a strong cost management strategy, a risk management plan, or cash flow forecasting to lessen this burden. Furthermore, contrary in other countries [16, 43-45], where owner change orders during construction are the most significant delay driver, they are the fourth most prominent element causing project delay in Somaliland.

Legal action or a lawsuit is regarded as the most serious consequence of construction delays in Somaliland development projects. This may be traced back to the fact that the bulk of contract agreements between customers and contractors are not in writing or signed, resulting in misunderstandings and misinterpretations of

building agreements, which can occasionally escalate into a lawsuit. Cost overrun is listed as the second most important consequence of building delays in Somaliland, similar to most other studies on the effects of construction delays [16] [18, 46, 47]. This verifies the findings of Ibironke et al. [46], Sambasivan and Soon [18], Aibinu and Jagboro [16], and Amoatey et al. [47]. Nevertheless, the aforementioned consequences of building delays are frequently negative to the contractual parties.

Although, various studies have been carried out on construction delays, particularly on the identification of delay factors and effects, little attention has been given to the identification of the early indicators of delays in construction projects. However, the current study looked at the early indications of construction project delays in Somaliland and found that a lack of project scope control/management was the most relevant. This indicates that construction professionals in Somaliland must refresh their expertise and get acquainted with project management abilities such as project scope management and project risk management.

Respondents selected relying on learning from previous experience as the most effective strategy to manage construction project delays in Hargeisa. This conclusion supports Majid [48], who identified adequate attention on prior experience as one of the 11 primary criteria that may significantly minimise construction delays. Finally, respondents selected arranging contractors in advance as the most desired remedy to Hargeisa's building delays. This suggests that scheduling the contractor at the early stage of the project will provide him the essential time to plan and recruit the finest skills for the execution of the project, hence avoiding project delays.

Author contribution

The authors confirm contribution to the paper as follows: study conception and design, data collection, Mustafe Abdillahi Omar “Asowe”; analysis and interpretation of results, draft manuscript preparation: Hassan Abdillahi Duale. All authors reviewed the results and approved the final version of the manuscript.

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Competing interests

Authors have declared that no competing Interests exist.

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