Examining the possible solutions to construction delays in the Somaliland construction industry [1]

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Abstract

Construction sector is one of the sectors that has contributed to the rapid development and economic growth of Somaliland in the last decade. However, this sector is overwhelmed with delays in construction projects and its aftermaths in recent times. In light of this, the aim of this research study is to develop solutions to delay-related issues and measures to mitigate its effects in projects in the Somaliland construction industry. Prior to the design of questionnaire, the 12 mitigating measures of delays in global construction projects were identified through a systematic review of relevant literature. Questionnaire survey was conducted with 51 stakeholders from the different construction companies that have been involved in construction projects in Somaliland. This was achieved based on simple random sampling approach. Feedback from the stakeholders were analyzed using RII and mean values obtained from SPSS statistics software for the purpose of ranking. The results from data analysis identified the most significant mitigating measures or solutions to construction delay issues as follows: scheduling contractors in advance; extensive planning and attention to detail: plan, review plan and continuously update plan and; applying value-engineering as a management tool for project execution. The implications of these findings are significant to construction stakeholders in terms of minimizing construction delays for the economic growth of Somaliland construction industry. Future researchers that might want to carry out similar studies can also validate their findings using the outcome of the current study. The key construction stakeholders are therefore recommended to take advantage of these possible solutions to project delay as strategies or proactive measures to mitigate the effects of delay when executing future construction projects in Somaliland and elsewhere.

Keywords: Construction Delay, Construction Projects, Mitigating Measures of Construction Delays, Somaliland Construction Industry

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1. Introduction

Over the years, the studies on mitigating construction delay have proven to be a vital part of the success stories recorded in the construction sectors across the globe [1]. This is because these studies provide better understand on how to minimize delays in construction and thus reducing the number of housing and road delay in different countries [2]–[7]. Consequently, project owners often try as much as possible to avoid delay in construction because the financial implication of such delay affects them [8], [9]. Yet, the degree to which the owner can regain the cost incurred as a result of delay from the Contractor is dependent on the terms in the construction contract [10], [11]. Likewise, the terms and conditions of the construction contract determines the extent to which the owner can reduce the risk of a project delay occurring [12]–[14]. This has stimulated the construction research community to explore numerous mitigation approaches over the past two decades [1], [15]–[20]. Within this context, mitigation or eradication of delays in construction projects represents a promising approach that can be used to minimize or reduce the negative factors that can threaten completion of a construction project within the stipulated time, budget and quality [3], [15]. Many works have been in this area of study and different researchers proffered a cope of mitigation measures according to the country of study [1], [2], [19], [3]–[7], [15], [16], [18]. However, most researchers believe that implementing suitable planning activities during the initiation and design phases of a construction project can be a vital mitigating measure that can avoid delay during the construction phase of such project [21].

In the study by Kumaraswamy [15] in 1997, on the conflicts, claims and disputes in construction projects, the author identified that collaborative working in construction as a major way to avoid project delay [15]. Odeh and Battaineh [21] classified the enforcement of liquidated damages and offering of incentives for early completion as major ways of avoiding construction delays [21]. In the same year, Aibinu and Jagboro [22] also ascertained that acceleration of site activities and contingency allowances are robust measures that can easily improve the conditions of construction projects [22]. In addition, Nguyen [16] conducted a related survey on the measures that can reduce delay in large construction projects in Vietnam. The author in his findings suggested five vital mitigation measure that include; availability of sufficient resources, multidisciplinary or competent project team, competent project managers, accurate first cost estimates and accurate initial time estimates [16].

Koushki et al. [17], also explored the ways of minimizing time delay and cost overrun in construction projects in Kuwait and pinpointed three vital measures [17]. These include adequate and readily accessible financial resources from start to finish of the project, selection of highly skilled consultant and reliable and capable contractors to implement the project [17]. Assaf and Al-Hejji [23] indicated that a complete and proper design at the right time is a significant approach to reduce the critical causes of delay in large construction projects [23]. In a more detailed work by Majid [18], the author identified 11 major measures that can drastically reduce delay in construction. These include; frequent progress meeting; use up-to-date technology utilization; use proper and modern construction equipment; use appropriate construction methods; effective strategic planning, proper material procurement; accurate initial cost estimates; clear information and communication channels; frequent coordination between the parties involved; proper emphasis on past experience; and proper project planning and scheduling [18]. Le-Hoai et al. [24] also proposed site management and supervision alongside compressing construction durations as

two important measures that should be considered in a construction project to avoid any form of delay [24].

In a more recent work by Khoiry et al. [19], the authors identified from prior work 143 methods of minimizing delays with a focus on issues associated with the construction sector in various countries [19]. The authors further attempted to classify the 27 most common measures identified from literature into four categories that include management, interpersonal, technical and technology [19]. Following the work by Khoiry et al. [19], some mitigation measures were identified by Sohu et al. [1] for 10 critical delay causes determined based on interview sessions with construction experts. The authors suggested several mitigation measures for each critical delay cause [1]. As the most critical delay cause specified by experts, the mitigation measure for "poor site management" include the effective handling of unforeseen situations at the site by the contractor, appropriate monitoring of construction activities, developing proper working collaboration among site personnel and adequate training programs for personnel working on site [1]. The authors also presented the selection of contractors with experience or history of quality construction works as the controlling measures for inadequate contractor experience as the second critical cause of construction delay [1]. Other measures of mitigating construction delay identified from the literature are presented in Table 1.

Table 1: Other methods of minimizing construction delays

S/N	Mitigation Measures
1	Accurate initial cost estimates [25]
2	Adopting a new approach to contract award procedure by giving less weight Prices and more weight to the capabilities and past performance of contractors [26]
3	Perform a preconstruction planning of project tasks and resource needs [27]
4	Selection of a competent consultant and are liable contractor to carry out the work [28]
5	Allocation of sufficient time and money at the design phase [17]
6	Resource Availability [23]
7	Commitment to projects [29], [30]
8	Competent project managers [31]
9	Comprehensive contract documentation [32]
10	Ensure adequate and available source of finance until project completion [33]
11	Frequent progress meeting [34]
12	Enforcing liquidated damage clauses [35]
13	Offering incentives for early completion [21]
14	Hire an independent supervising engineer to monitor the progress of the work [36]
15	Multidisciplinary/competent project team [37]
16	Make use of current technology [38]
17	Absence or less bureaucracy [36]
18	Accurate initial time estimates [36]
19	Adopting new approaches to contracting such as Design-Build (D/B) [39]
20	Construction management (CM) type of contracts [40]
21	Awarding bids to the right/experience consultant and contractor [41]
22	Clear information and communication channels [42]

23	Developing professional and skillful of human resources in the construction industry through proper training and classifying of craftsman [36]
24	Effective strategic planning [7]
25	Systematic control mechanism [40]
26	Proper emphasis on past experience [43]
27	Community involvement [44]
28	Systematic control mechanism [40]
29	Acceleration of site activities [5]
30	Contingency allowance [40]

After carefully examining the mitigating measures of construction project delay identified by selected researchers globally, the 12 major mitigating measures of construction project delay were investigated in the current study. Within this context, the aim of this study is to investigate the possible solutions to construction project delay the Somaliland construction industry. The identification and evaluation of the significant mitigating measures to construction project delay is achieved via the gathering of primary and secondary data before validating the data with the use of statistical methods. Besides, the current study further offers novel insights that possibly will guide construction stakeholders, major construction decision-makers and policy-makers in the formulation of future approaches and guidelines that can help avert impending construction project delays and its consequences. Future independent or government researchers or academicians that might want to carry out related studies elsewhere can validate future findings using the outcome of the current study.

The first part of this research study presents the background introduction and related works on the mitigating measures of construction project delay in different countries. The second part provides details regarding the research methodology adopted in this study. The research findings obtained via the use of statistical tools are also analyzed in the third part while the fourth part discussed and explored the implications of the findings in the current research work. The concluding remarks and noteworthy recommendations are presented in the last part.

2. Research methodology

A questionnaire survey approach was adopted in this study to examine the solutions to/or mitigating measures of construction project delay in the Somaliland construction industry. The current research work employed a quantitative research via field sources to obtain suitable data from target respondents. A sample size of 61 respondents was selected from a target population of 70 construction practitioners, using simple random sampling method, as suggested by Ref. [45]. In order to directly attain sincere information from the survey participants, structured questionnaires were designed based on the identified mitigating measures of construction project delay. However, in order to ensure that the quality in research instrument reaches the precise magnitude in terms of its steadiness, a pilot survey was adopted. This was achieved through a convenience sample of experts in the construction industry to validate the contents of the questionnaire, individually, before the questionnaires were distributed. A soft copy of the questionnaire was sent to one practicing construction experts and two paper copies of the questionnaire were given to two academics for technical checks and to ensure that the sentences

are precise and clear enough for the intended research purposes. Subsequently, their suggestions and comments were modified, before a final version of the questionnaire was attained.

The questionnaire distribution was mainly carried out among owners, consultants and contractors working in Somaliland construction industry through self-administration. This was geared towards obtaining the primary data. A total of 12 major mitigating measures of construction project delay that serves as solutions to the effects of construction delays identified by Fashina et al. [46] were investigated in this study. In addition, based on the level of importance, these mitigating measures were rated in the current research work according to Likert's scale of 5 ordinal measures (i.e. from 1 to 5) [47].

In an effort to ensure that the questionnaires were appropriately filled after the administration of the questionnaires, the respondents were given a week before the questionnaires were collected. Subsequently, a reliability test was carried out for the collected data using the Cronbach's Alpha method [48], [49]. This was attained by the use of SPSS Statistics Software (version 25) to calculate the Cronbach's Alpha (See Equation 1), which was then utilized to determine the reliability coefficient and internal consistency of the feedbacks from the respondents.

$$\textbf{Cronbach's alpha, } \alpha = \frac{K}{K-1}\left[1 - \frac{\sum V_i^2}{V_x^2}\right] \quad \textbf{(1)}$$

where K, represents the number of items; V_i represents the variance of scores on each item; and V_x, represents the variance of the observed total test scores.

Prior to the data analysis of the feedbacks, using statistical tools, responses obtained from the participants via the questionnaires were filtered, and entered into spreadsheets (Microsoft Excel 2019 and SPSS work area). The preparation of the data into the much-needed information was geared towards interpretation the answer provided by the respondents [47]. Moreover, in order to realize the objective of the study, Relative Importance Index (RII) was chosen as a suitable analytical method used to generate a mean rating point and analyze the ratings received from the feedbacks [50], [51]. The RII formula adapted from Ref. [52] is given by:

$$\textbf{Relative importance index, RII} = \frac{\sum W}{A \times N} \quad \textbf{(2)}$$

where W, is the rating assigned to each delay effect by the participants. For example, 5 represents very highly effective, 4 represents effective, 3 represents averagely effective, 2 represents low effective and 1 represents very low effective. A represents the highest weight (5 for the current study) and N is the valid sample size (48 for the current study).

In addition, the study was conducted based on the standard ethical practices required of any reputable academic research. Respondents were informed both orally and in writing about the objective of the study and their consents was established before filling out the questionnaires. The confidentiality respondents were also assured before engaging them.

3. Results and data analysis

3.1 Survey results

Out of the 61 questionnaires that were randomly distributed to the target respondents, 51 (83.6 %) of the participants returned the questionnaires while the remaining 10 (16.4 %) participants were unable to provide information. Of the 51 questionnaires returned however, 3 of the feedbacks received from the participants were excluded as invalid while 48 feedbacks were considered to be valid (See Table 2).

Table 2: Summary of the total numbers of questionnaires distributed and returned, excluded, and valid questionnaires

S/N	Number of questionnaires distributed	Not returned	Number of returned	Valid	Invalid
1	61	10	51	48	3
2	100 %	16.4 %	83.6 %	94.12 %	5.88 %

3.2 Respondents' role/position in the company

Table 3 presents the frequency and percentage distribution of the respondents' role/position in the company. Regarding the respondents' role/position in the company, it is depicted in Table 3 that, of the 48 valid respondents, 6 are managing directors, 11 are project managers, 18 are project engineers, 7 are site supervisor, 4 are site manager and the remaining 2 falls under other project management-related positions. Moreover, majority of the respondents are project engineers (37.5%) while the position with the lowest frequency is recorded as the "other project management-related position (4.2 %), as shown in Table 3.

Table 3: Frequency and percentage distribution of respondents' role/position in the company

S/N	Description	Frequency	Percentage
1	Managing director	6	12.5%
2	Project manager	11	22.9%
3	Engineer	18	37.5%
4	Supervisor	7	14.6%
5	Site manager	4	8.3%
6	Other	2	4.2%
7	Total	48	100%

3.3 Respondents' years of experience in the construction industry

Table 4 presents the frequency and percentage distribution of the respondents' years of experience in the construction industry. As indicated in Table 4, over half of the respondents possesses between 5 to 10 years of experience (52.1%), while 37.5 % have less than 5 years of experience. In addition, only one respondent has between 11 to 15 years of construction experience whereas

the respondents with the most years of experience are 4 in number, as shown in Table 4. Moreover, since most of the respondents that took part in the questionnaire survey (Above 63%) are very experienced professionals in the construction industry, this is expected to have a positive impact on the results obtained in this study.

Table 4: Frequency and percentage of the respondents' years of experience in the construction industry

S/N	Description	Frequency	Percentage
1	Less than 5 years	18	37.5%
2	5-10 years	25	52.1%
3	11-15 years	1	2.1%
4	More than 15 years	4	8.3%
5	Total	48	100%

3.4 Number of construction projects that respondents have participated in

In an effort to find out the number of construction projects that the respondents have participated in, the distribution of the respondents' experience in construction projects are presented in Table 5. In addition, Table 5 shows that the respondents' experience in construction projects are evenly distributed. 33.3% of the respondents have been involved in more than 9 construction projects, 22.9% have already been involved in 7 to 9 construction projects, 16.7% have been involved in 4-6 construction projects and 27.1% have been involved in 1 to 3 construction projects. This implies that about 56 % of the respondents have be involved in a minimum of 7 construction projects.

Table 5: Frequency and percentage distribution of the number of construction projects that the respondents have been involved in

S/N	Description	Frequency	Percentage
1	1-3 projects	13	27.1%
2	4-6 projects	8	16.7%
3	7-9 projects	11	22.9%
4	More than 9 projects	16	33.3%
5	Total	48	100%

3.5 Knowledge of the respondents concerning the company's experiences with delay in executing construction projects

Table 6 presents the frequency and percentage distribution of the knowledge of the respondents concerning the company's experiences with delay in executing construction projects. Table 6 shows that 25 of the respondents' companies have experienced 1 to 3 project delays, 16 have experienced 4 to 6 project delays, 3 have experienced 7 to 10 project delays and four have experienced more than 10 project delays. As depicted in Table 6, 52.1% of the respondents believes that their companies have experienced delay in 1 to 3 construction projects. However, four (8.3%) of the respondents indicated that their companies have experienced over 10 delays in construction projects. This can be traceable to the fact that, of all the 48 respondents, only four

respondents (8.3%) have more than 15 years of experience in the construction industry (See Table 4).

Table 6: Frequency and percentage of the knowledge of the respondents concerning the company's experiences with delay in executing construction projects

S/N	Description	Frequency	Percentage
1	1 to 3	25	52.1%
2	4 to 5	16	33.3%
3	7 to10	3	6.3%
4	More than 10	4	8.3%
5	Total	48	100%

3.6 Cronbach's alpha data reliability test

With the use of Table 7, the internal consistency of feedbacks from the respondents was measured based on range of the Cronbach coefficient obtained. Besides, the results of the Cronbach's Alpha reliability test carried out for the answers provided by the respondents with regard to the 12 mitigating measures examined in the current study show that the Cronbach's Alpha values is 0.826. Meaning that the internal consistency of the feedbacks received in the current research study has an excellent reliability of 82.6%.

Table 7: Internal consistency of Cronbach's Alpha

S/N	Cronbach's alpha, α	Internal consistency
1	$\alpha \geq 0.8$	Excellent
2	$0.8 > \alpha \geq 0.7$	Good
3	$0.7 > \alpha \geq 0.5$	Satisfactory
4	$\alpha < 0.5$	Poor

3.7 Analysis of the possible solutions to the problem of construction delay

The 12 possible solutions to the problem of construction project delay investigated in this study are ranked according to RII and Mean Value obtained. In an effort to establish the level of importance of the individual effects of delays in construction projects, the RII classification table in Table 8 was used as a baseline to rank the RII and Mean Value for each mitigating measures of construction delays.

Table 8: Classification of RII

Scale	Level of Contribution	RII
1	Very low	$0.0 \leq RII \leq 0.2$
2	Low	$0.2 < RII \leq 0.4$
3	Average	$0.4 < RII \leq 0.6$
4	High	$0.6 < RII \leq 0.8$
5	Very high	$0.8 < RII \leq 1.0$

Table 9 presents the results of the survey analysis of the possible solutions to the problem of construction delay. Based on the perception of the respondents, Table 9 indicates that scheduling contractors in advance (RII = 0.863) is the most preferred possible solution to the problem of construction delays in terms of the level of importance to construction projects. Followed by 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 during the procurement of builder/contractor, the contractor proven competency is considered rather than lowest bid/tender (RII = 0.808), improving the management methods used throughout the project lifecycle (RII = 0.804), in the second, third, fourth, fifth, sixth and seventh rank positions, respectively. Establishing a detailed case-by-case pre-contract appreciation and insertion of escalation and fluctuations special clauses to address uncertainty (RII = 0.788) and establishing clear and consistent communication among all parties (RII = 0.779) were ranked as the eight and nineth rank positions, respectively. These seven possible solutions are of high importance in term of their potential in mitigating construction delays in Hargeisa.

According to the respondents, the other five are perceived to possess a high-median level of importance. Despite their positive impacts, the following are seen as the least possible solutions to the problem of construction delay: 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), ensuring the early purchase are done to address material price appreciation/increase (RII = 0.771), respectively.

Table 9: 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

4. Discussion and implications of the findings

The respondents agreed that 'scheduling contractors in advance' and 'extensive planning and attention to detail: plan, review plan and continuously update plan' are the two most effective solutions to delays in construction projects in the Somaliland construction industry, respectively. This is quite significant as it implies that scheduling the contractors at the early stage of the project will grant them the required time to extensively plan, pay attention to detail and recruit the best talents for the execution of the project and in turn avoid delays in the project. This subsequently ensures that vital resource bottlenecks are avoided in projects and in turn lessen potential cost escalation. One can thus argue that the choices here by the respondents is justifiable for the first and second rank positions as they serve as solutions to compromise of quality of construction projects in Somaliland that often leads to mistakes and reworks in construction activities in most building projects [14].

Feedbacks from the survey also indicate that 'applying value-engineering as a management tool for project execution' and 'assigning clear and comprehensive roles and responsibilities from the start of the project' as the third and fourth most effective solutions to delays in construction projects in the Somaliland construction industry. For the former, it seems to be a proper approach for the construction companies in Somaliland since they are mostly involved in large construction projects that requires qualitative and quantitative outcomes via the provision of high standard engineering services. Moreover, this validates the work by Rad and Yamini [53] that suggests that high complexity of construction projects, high project implementation cost, changing technical characteristics of design etc. are some of the main reasons why value engineering is used in construction projects. The later on the other hand, shows the importance of managing project tasks or activities to achieved the project schedule or timeline in Somaliland. This is quite important as most delay in projects often lead to lawsuit in the country [14].

As perceived by the respondents, the fifth and sixth most effective solutions to delays in construction projects in the Somaliland construction industry are using construction project management software to streamline project plans (E.g. Genie Belt, eSUB, Open Workbench, Opendocman etc.) and ensuring that during the procurement of builder/contractor, the contractor proven competency is considered rather than lowest bid/tender, respectively. This is to a large

extent agreeable because in an effort to ensure successful progress and implementation of a construction project plan, information processing is crucial and one broadly used method for the representation of physical and functional features of construction project planning is Building Information Modeling (BIM).

Improving the management methods used throughout the project lifecycle, establishing a detailed case-by-case pre-contract appreciation and insertion of escalation and fluctuations special clauses to address uncertainty, and establishing clear and consistent communication among all parties were ranked by the respondents as the seventh, eighth and nineth effective solutions to delays in construction projects in the Somaliland construction industry, respectively. Since the lack of precise project progress and performance information has been seen as one of the main challenges that affect project performance and resource in Somaliland, improving the management methods used throughout the project lifecycle could be seen as one of the important solutions to project delay in the industry. Also, the challenge of lawsuits and conflict between project owners/clients and contractors which is presently on a hike in Somaliland can be easily mitigated by establishing a detailed case-by-case pre-contract appreciation and insertion of escalation and fluctuations special clauses to address uncertainty in construction projects [46]. In addition, it is not surprising that establishing clear and consistent communication among all parties was ranked in the eighth position, since must of this projects lacks proper coordination and communication within contracting parties in Somaliland which thus lead into change order or conflicts [54], [55].

The findings from the current study further reveal that the respondents ranked implementing construction management (CM) and design-build standard forms of contract, establishing clear risk allocation between parties in construction projects, ensuring the early purchase are done to address material price appreciation/increase as the three least effective solutions to delays in construction projects in the Somaliland construction industry, respectively. This list is quite understandable because most construction companies in Somaliland only have few local personnel that are expert in construction management and more interestingly, contract in the Somaliland industry are mostly done verbally as described in the study carried out by Sheikh et. al [11]. Finally, one can argue that the decision of the respondent to place 'ensuring the early purchase are done to address material price appreciation/increase' as one of the least effective solutions is acceptable base on the fact that Somaliland construction industry is mostly dependent on the importation of building materials, mainly from Europe, Asia and some part of Middle East.

Generally, the implications of the findings in this study are significant to future studies. First, in an effort to ease the timely delivery of impending construction projects for social use, the findings from this study is anticipated to guide stakeholders and decision-makers in Somaliland and elsewhere on how to take proactive measures to mitigate potential effects of construction delays. Second, the findings also provide practical, research, and policy values in the understanding of the solutions to project delays and their effects in global construction industry. In terms of research implications, academic and government researchers can validate the findings of similar research work in other part of Somaliland or elsewhere, particularly, in low- and medium-income countries, using the outcome of this study. Furthermore, the findings from this study would also play a vital part in the analysis of potential risks involved in the execution stage of future global construction projects. Moreover, the originality of the study comes from the fact that it provides an improved understanding on the solutions to project delays and their effects by contributing insightful

evidence that could guide construction consultants and contractors that are new or just entering into the global construction industry.

5. Conclusions and Recommendations

In conclusion, a total of 12 possible solutions to construction delays have been identified and analyzed to successfully achieve the objective of this study. Of the 12 possible solutions of construction delays investigated in this study, the following are the top five most significant possible solutions to delay in construction projects: scheduling contractors in advance (1st); extensive planning and attention to detail: plan, review plan and continuously update plan (2nd); applying value-engineering as a management tool for project execution (3rd); assigning clear and comprehensive roles and responsibilities from the start of the project (4th) and; using construction project management software to streamline project plans (E.g. Genie Belt, eSUB, Open Workbench, Open docman etc.) (5th), as shown in Figure 9. The two least significant possible solutions to construction delay in Hargeisa are found to be implementing construction management (CM) and design-build standard forms of contract, and establishing clear risk allocation between parties in construction projects, respectively.

In addition, the main contribution of this study is to guide construction practitioners to adopt proposed measures for integration and benefit from the strategies for integration in order to experience higher success rates. The findings from this study is expected to provide policymakers, construction project developers, decision-makers and others key stakeholders within the construction industry with detailed information on how to take proactive measures to reduce or prevent potential impacts of delays in construction projects in the industry. This will guide the development and formulation of short- and long-term evidence-based measures/strategies required to eliminate the effects of construction projects delay and in turn improve the construction industry's processes and operations in Somaliland and elsewhere.

While the current study focused more on the mitigating measures of delay in construction projects in Hargeisa, it is strongly recommended that future researchers can pay attention to building construction projects in Hargeisa and other parts of the country, since most of the ongoing construction projects are building projects. Moreover, the current work used a sample size of 61 which can be improved in future researches. Further work is clearly needed to explore a larger sample size in order to yield a more valid result. Furthermore, the research survey was conducted via structured questionnaires that is based on literature review. Thus, future researches can make further effort to conduct structured and unstructured interviews with the project stakeholders in an effort to strengthen the current work. This can provide more insights on the new/recent mitigating measure or early indicators of delays in construction projects.

Finally, in order to ensure that the management of delays in construction projects in Somaliland and elsewhere is appropriately improved, the following recommendations are important:

- Minimizing change orders during construction can help avoid project delays [56], [57];
- Inappropriate communication and coordination with contracting parties must not be encouraged in other words, good communication channel should be utilized by the contracting parties to avoid delays [58];

- Contractors should have good site managers that can allocate the required amount of manpower to the construction site, and can ensure that site productivity is continuously maintained by mobilizing all resources for the smooth execution of the project [9], [56];
- In an effort to minimize variation during construction, consultants should avoid delay in checking, reviewing and approving major changes in the work scope [59];
- The government of Somaliland should make efforts to set up a building and construction codes/standards in the construction industry [11], [20].

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