The significant factors that influence the choice of project scope management practices in telecommunication companies in Somaliland[1]

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Abstract

Following the increasing advances in the application of project management in many industries, stakeholders in the telecommunication industry are now adopting project management practices in an effort to ensure that telecommunication projects are well implemented and delivered successfully. However, the success or failure of these telecommunication projects is dependent on how productive the scope management is. Within this context, this paper presents the results of a questionnaire survey that provides insightful evidence of the significant factors that influence choice of project scope management practices in the telecommunication industry in Somaliland. Before the design of the questionnaire, a comprehensive literature review was carried out to identify 14 factors that influence the choice of project scope management practices. Structured questionnaires were then administered to 75 stakeholders that include among others; top managers, project managers, and consultants from the three telecommunication giants in Somaliland. Data obtained from the survey was analyzed using SPSS Statistics Software and Microsoft Excel Packages to compute the Cronbach's Alpha, mean values and Relative Importance Index (RII), respectively, for reliability check and ranking purposes. The results from the analysis showed that the three most significant factor that influences the choice of project scope management are: effectiveness of technology (RII = 0.668); government policies (RII = 0.664) and; the need to implement a contingency plan due to accounted risks (RII = 0.644), respectively. The implications of the results obtained from this study are also discussed before providing recommendations for future application of scope management when executing projects in the telecommunication industry.

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1. Introduction

In the past two decades, there have been significant advances in the application of project management in many industries including the telecommunication industry [1], [2]. This has helped many organizations to bring to the table the much-needed change in order to meet up with their set goals and objectives [3]–[5]. Normally, organizations initiate projects with the purpose to succeed. But the complexity of the project activities, and the challenges related to the management of projects restriction or limitation of budget, quality and time are unique and ever changing [6], [7]. Moreover, in project management, the target of stakeholders is aimed at the completion of the project and how it can effectively produce the intended outcome [8], [9]. In an effort to ensure that these projects are implemented and delivered to the stakeholders within the required timeframe, project scope management is adopted, particularly, in telecommunication industry [10]–[12]. It follows that project scope management help to proactively manage projects such that the expected outcomes are attained for the purpose upon which they are initiated [13].

Scope is the most vital component that can guide the understanding of any project [14]. Planning and distribution of resources are carried out based on the project scope. This implies that the successful outcome of a project is dependent on how the scope is been controlled and managed. A project completion is seen to be good when it is accomplished within the deadline and doesn't incur additional work or cost [15], [16]. This is the reason why it is necessary for companies to clearly define the project requirements before the start of the projects [5]. This is vital to successfully manage such projects. Besides, the scope of a project is defined as early as in planning and estimation phases of the projects [17]. This has to be well-defined in a way that it can be used as a guide for project managers and stakeholders to know the direction to follow or not [17], [18]. On the other hand, project scope managements are the process of defining what work is needed and then ensuring only that work is done. Project scope management involves planning, creation of work breakdown structure and verification and control of project scope [19]–[21]. A clearly defined and precise project scope assists the project manager to evaluate the resources required to implement the project and make genuine commitments [22]. Basically, the project scope statement defines the borderline of the project manager's risks. Many organizations are faced with challenges as regards the implementation of these projects to desired potentials [23], [24]. Consequently, remarkable efforts have been made in the identification of the application and management of project procedures, practices, processes and standards and methodologies [25]. This is geared towards ensuring that projects requirements and scope are properly analyzed and documented to support project delivery and success [26].

Project scope management is applied essentially to support the management of projects to succeed including ICT projects that are initiated by telecommunication companies [27], [28]. It compromises of all practices that will help in ensuring that all the required works alone are carried out in the course of the project work. Prior work also validated that the main project scope management practices used by telecommunication industry are defined by project scope, control

scope, verify scope and create work breakdown structure [29]. Nonetheless, a project scope statement is a vital way of gaining support. This is because it gives sponsors confidence that the project objectives are well understood and can easily accomplish its set goals and objectives. The definition and management of project scope however, involves understanding documenting and implementation requirements that are needed to accomplish project goals and objectives [30]. Embracing project scope management to manage projects goes a long way in improving project delivery success, especially, among IT projects implemented by telecommunication organizations [31], [32].

Furthermore, regardless of the well-known fact that a clear understanding of the need to achieve project success, particularly, in telecommunication projects, only few works have been published on the importance of scope on project success. One of the notable works among those published is the work by Mirza et. al [33]. The authors discussed about the factors that influences the mismanagement of scope and the mitigation measures for the identified factors [33]. In their conclusion, the authors recommended that a better appreciation of the discrepancy between the project and product scope can bring a higher opportunity for project success. In a more related work, Ogunberu et. al [32] examined the factors that influence the choice of scope management practices on ICT projects implementation among telecommunication organizations in Nigeria. The questionnaire survey revealed that among the 11 identified factors, adoption of project scope management practices by telecommunication organizations in Nigeria are majorly affected by competitive advantage, complex project scope statement, client demand and return on investment, respectively [32]. In another work by Ogunberu et. al [29], the authors explored the impact of project scope management practices on project success among telecommunication companies in Nigeria. The findings from their study disclosed customer expectation, customer satisfaction, resource allocation and project duration as the main significant impacts of project scope management practices on the success of telecommunication projects [29]. However, since low success rates were recorded in projects implemented without scope management practices, the authors in the closure of the study recommended that Nigerian telecommunication companies should strictly employ the use of scope management when implementing telecommunication projects [29]. However, accomplishing the accurate outcomes is the main test of real performance in project management; and this is noticed through implementing the scope [13]. It takes preferences over the restrictions of budgets and deadlines. So, this implies that the management of projects restriction clarifies the reason for the failure of many projects, particularly, in the telecommunication sector. It is therefore clear, that there is a need for more work to be done in this area.

Moreover, Scope management offers the basis upon which all project work in the telecommunication industry is built and it is, thus, the peak of predevelopment planning [34]. This is why the implementation of project scope management in the telecommunication industry in Somaliland has experienced an increase evolved in the past few years [2]. The use of project scope management is important in this industry because it help to proactivity manage telecommunication projects in such a way that the expected outcomes/products can be realized in line with the purpose upon which they are embarked upon [34], [35]. However, some organizations in the industry are faced with some challenges during the implementation phase of these projects and sometimes with the problem of securing the procedures and practices that ease success [4], [35]. In the light of

this, efforts are being made in recent times to identify and apply the proper project management procedures, practices, standards, structures and methodologies that can help in achieving success in the telecommunication companies [10], [21]. Although, it is quite challenging to create a satisfactory project scope and diminish scope changes during the project, it is important that at the end of a telecommunication project its scope is measured against the planned requirements. There is therefore, a need to explore the factors that influence the choice of project scope management practices in telecommunication companies in Somaliland.

This study attempts to contribute to knowledge in this regard by investigating the factors that influence the choice of implementing project scope management during the course of executing projects in the Somaliland telecommunication sector. This study also proffers significant information that can guide the current and future project managers on how to successfully execute projects via project scope management practices in the telecommunication industry. Moreover, the current paper further provides new insights that could guide telecommunication stakeholders, decision-makers and policy-makers on how project scope management practices is significant to the success of telecommunication projects.

2. Research methodology

This study adopts a questionnaire survey technique to examine the significant factors that influence choice of project scope management in telecommunication projects in Somaliland. A quantitative research was used in collecting information and data from the study population through field sources. A total of 75 respondents from a population of 90 constituted the sample size. This was determined using the Krejcie and Morgan's table for determining small-sample size from a given population. Details regarding the table can be found in [36]. In order to directly obtain first-hand information from the respondents, structured questionnaires were used to gather the primary data in this research survey through self-administration. The questionnaire design comprises of two sections that include the respondent's basic information and the factors that influence the choice of project scope management practices. A total of 14 possible factors that influence the choice of project scope management practices were investigated in this study. Also, these factors were rated in this study based on the Likert's scale of 5 ordinal measures from 1 to 5 according to the level of contribution [37].

In an effort to certify that an appropriate level of quality in the research instrument is attained in terms of its reliability and steadiness, a pilot survey was carried out. This was achieved using a convenience sample of experts in the telecommunication industry to review the questionnaire, individually. Before the distribution of the questionnaires, three copies were presented to three telecommunication practicing experts, two in Hargeisa and one in Nigeria to the validate the contents of the questionnaire and to ensure that the sentences are clear and precise, accordingly.

Although, the pilot survey was employed to determine the reliability of the survey questionnaire to the telecommunication industry, the need to analyze the reliability of the collected data using the Cronbach's Alpha method was also significant to this study [38]. This is achieved by using Equation 1 to calculate the Cronbach's Alpha [38]:

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

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.

SPSS Statistics Software (version 25) was employed to compute the Cronbach's Alpha, and the reliability coefficient was determined to show the internal consistency of the data.

In an effort to attain the objective of the study, a Relative Importance Index (RII) was selected as a suitable analytical method [7]. This was used to analyze the ratings received through the questionnaires and establish a mean rating point, that represents the rating for each group contributors. Each calculation was carried out using RII formula in Equation 2 [7]:

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

where W, represents the rating given to each factor by the respondents. For instance, 5 is for very high contributing factor, 4 is for high contributing factor, 3 is for average contributing factor, 2 is for low contributing factor and 1 is for very low contributing factor. A is the highest weight (5 for this study) and N represents the total number of samples (50 for this study).

Furthermore, the study was conducted according to the ethical codes of Gollis University and standard ethical practices required of any reputable academic research. Respondents were informed both verbally and in writing concerning the purpose of the study and their consent was confirmed before completing the questionnaires. Respondents were also assured of confidentiality.

3. Results and discussion

3.1 Survey results

Of a total of 75 questionnaires that were distributed randomly among the three selected telecommunication companies, 59 questionnaires were returned, 16 respondents were unable to provide information regarding the questionnaires, 9 questionnaires were recorded invalid, and 50 questionnaires were deemed valid (See Figure 1). This implies that a total of 78.7% responses were received from the participating companies/professionals.

Regarding the respondents' years of experience in the telecommunication industry, Figure 2 specifies that over half of the respondents have less than 5 years of experience (54%), 38% of the respondents possesses 5-10 years of experience, 4% of the respondents have 11-15 years of experience while the remaining 2% have over 15 years of experience in the telecommunication industry. In addition, the results also indicate that 46% of the respondents have above 5 years of experience in the telecommunication industry. To an extent, this should however, have a positive impact on the results acquired in this study.

Figure 3 presents the frequency and percentage distribution of the number of telecommunication projects that the respondents have participated in. Figure 3 show that the respondents' experience in telecommunication projects are not evenly distributed. This is because 80 % of the respondents have been involved in 1 to 6 telecommunication projects i.e. 40% have experience with 1-3 projects and another 40% have been involved in 4 to 6 telecommunication projects. However, the

remaining 20% of the respondents have been involved in 7-10 projects (4%) or over 10 projects (16%).

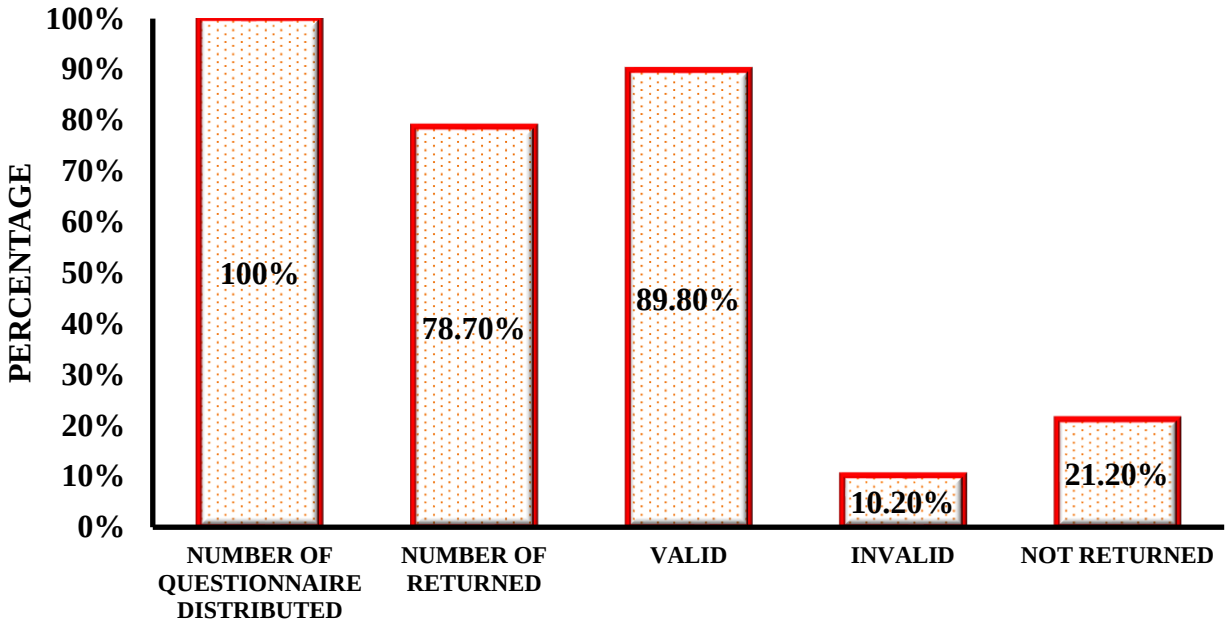

Figure 1: Response rate of target respondents (%)

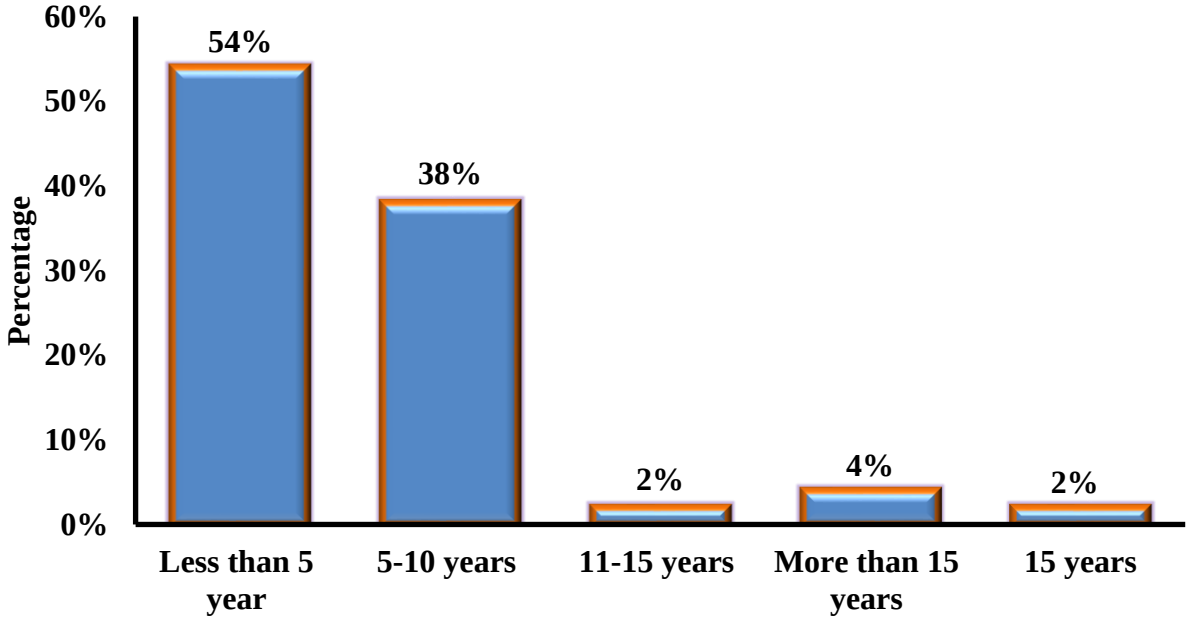

Figure 2: The percentage distribution of respondents' number of years of experience in the telecommunication industry

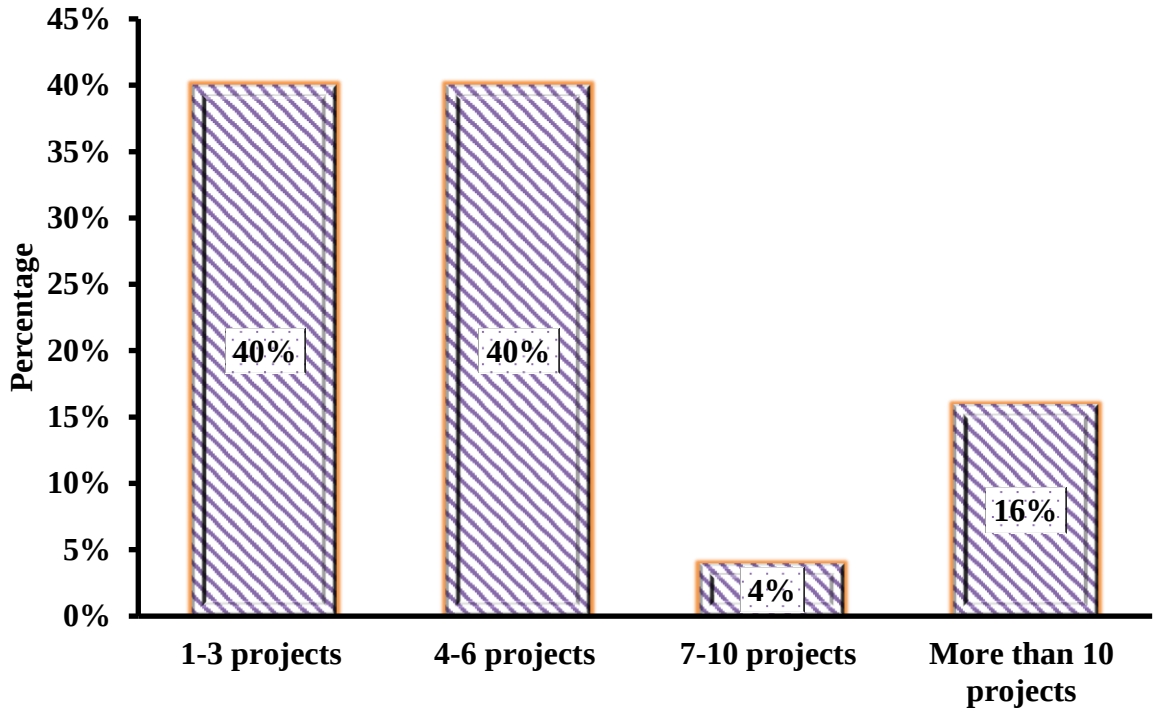

Figure 3: The number of telecommunication projects that the respondents have been involved in

3.1 Cronbach's alpha data reliability test

Prior to the analysis of the results obtained from the questionnaire survey, Cronbach's Alpha data reliability results were acquired to measure the internal consistency of the questions, using the Likert's scale. Furthermore, the internal consistency of the factors that influence the choice of project scope management practices was determined based on the Cronbach coefficient obtained, using Table 1 [39].

The results of the Cronbach's Alpha reliability test conducted for the 14 factors shows that the Cronbach's Alpha values is 0.759, indicating that the internal consistency of the questions in this study is good. This thus implies that the answers provided by the respondents in general, regarding these factors has a good reliability of 75.9%.

Table 1: 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

3.2 Analysis of the factors that influence the choice of project scope management practices

The objective of the study is related to the identification of the factors that mostly influence the choice of project scope management practices in telecommunication companies. 14 factors have been identified before discussing the results of the analysis. These factors are ranked based on Relative Importance Index (RII) and Mean Value. To establish the level of contribution of the different factors that influence the choice of project scope management, the RII and Mean Value rankings are classified based on the RII classification table presented in Table 2.

Table 2: Classification of RII

Scale	Level of contribution	RII
1	Very low	$0.0 \leq RII \leq 0.2$
2	Low	$0.8 < RII \leq 0.4$
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 3 illustrates the results of the survey analysis of the factors that influence the choice of project scope management practices. As perceived by the respondents, Table 3 indicates that the effectiveness of technology (RII = 0.668) is the most preferred factor in terms of the level of contribution to the choice of project scope management practices in the telecommunication companies. Furthermore, government policies (RII = 0.664) is ranked second, the need to implement a contingency plan due to accounted risks (RII = 0.644) is ranked third, client's demand (RII = 0.636) is ranked fourth, when adequate technical skills are required (RII = 0.632) is ranked fifth, competitive advantage (RII = 0.580) is ranked sixth, fast-tracking (RII = 0.576) and project delays (RII = 0.576) are both ranked seventh while return on investment (RII = 0.548) is ranked eighth. Moreover, the following are seen as the least factors that influence the choice of project scope management practices, respectively: complexity in project scope statement (RII = 0.480), organizational process assets (RII = 0.504), a list of complex activities (RII = 0.512), and expert judgment (RII = 0.54).

The implications of the results obtained in this research work are quite significant. First, they show that project scope management can help manage the expectations and decisions of telecommunication clients and stakeholders which in turn improves project success. The results of the study further indicate that project scope management can play a central role in telecommunication projects, as suggested by Dekkers and Forselius [40]. Furthermore, the results reveal that the effectiveness of technology is the major factor that influences the choice of project scope management practices in the telecommunication industry in Somaliland. This implies that telecommunication companies in Somaliland understand the importance of the ever-changing world of technology, as observed in the work of Dekkers and Forselius [40].

Unlike in the questionnaire survey carried out by Ogunberu et al. [32] on the factors that influence the choice of scope management practices on ICT projects implementation among

telecommunication organizations in Nigeria, where competitive advantage, organizational process assets, complex activity list, and complex project scope statement are the top four significant factors, the results from the current work show that the effectiveness of technology, government policies, the need to implement a contingency plan due to accounted risks, and client's demand are the top four significant factors. This implies that the perception in Somaliland is different from that of Nigeria.

Table 3: The Mean Score Value and RII ranking for factors that influence the choice of project scope management practices

S/N	Factors that influence the choice of project scope management practices	RII	Mean value	RII & Mean value ranking	Level of contribution
1	Competitive advantage	0.580	2.900	6	Average
2	Return on investment	0.548	2.740	8	Average
3	Complexity in project scope statement	0.480	2.400	13	Low
4	A list of complex activities	0.512	2.560	11	Average
5	Organizational process assets	0.504	2.520	12	Average
6	Expert judgment	0.540	2.700	9	Average
7	Insufficient resources	0.532	2.660	10	Average
8	Fast-tracking	0.576	2.880	7	Average
9	Project delays	0.576	2.880	7	Average
10	Client's demand	0.636	3.180	4	High
11	When adequate technical skills are required	0.632	3.160	5	High
12	Effectiveness of technology	0.668	3.340	1	High
13	Government policies	0.664	3.320	2	High
14	A need to implement a contingency plan due to accounted risks	0.644	3.220	3	High

4. Conclusions

In conclusion, this study has explored the significant factors that influence the choice of project scope management practices in the context of Somaliland telecommunication sector. A total of 14 factors that influence the choice of project scope management practices have been identified from literature. Internal consistency of these factors was tested and validated via Cronbach's alpha. The results of the analysis of the responses from the questionnaire survey disclosed that the top most influential factors agreed upon by the respondents as the major factors that typically contribute to the choice of project scope management practices in telecommunication projects are: effectiveness of technology (1st); government policies (2nd); the need to implement a contingency plan due to accounted risks (3rd); client's demand (4th) and; when adequate technical skills are required (5th). Moreover, the findings from the analysis also revealed that complexity in project scope statement

and organizational process assets are the two least significant factors that influence the choice of project scope management practices, respectively, as depicted in Table 3.

Furthermore, the key contribution of this study is providing a better understanding on the significant factors that influence the choice of project scope management practices in telecommunication projects. The findings from this study are thus expected to provide new insights that could guide policy-makers, decision-makers and stakeholders on how project scope management practices are vital to the success of any project in the telecommunication industry. This is because the current study could guide telecommunication stakeholders in the formulation of evidence-based strategies for future implementation of project scope management in the telecommunication industry.

On a final note, since this study has shown that the application of project scope management practices has meaningfully impacted project success in the telecommunication industry, it is strongly recommended that telecommunication companies should mandate scope management practices in the implementation of all telecommunication projects. This also implies that Somaliland telecommunication companies would need to sufficiently build the capacity to continually train a critical mass of their staffs to acquire necessary project management skills in order to become effective.

5. Declaration of Conflicting Interest

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As an QHSE Consultant/Trainer at present, she conducts QHSE training, consulting and auditing/evaluation exercises that help improve the QHSE Management Systems of various organizations. This allows her to adequately provide her clients with the necessary advisory services that include but not limited to HSE employee orientation training, development, planning and implementation of QHSE Management Systems, QHSE auditing, Environmental Management System, process improvement and so on.

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