



Factors affecting the successful implementation of telecommunication tower projects in Zambia

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Abstract

The research aimed at identifying factors that affect the successful implementation of telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia Limited, in order to ensure adequate measures are put in place to support the successful implementation of telecommunications tower projects by market players. The study took a pragmatic approach to inquiry with a triangulated design where 16 professionals with industry experience and position of influence were purposively recruited. Data was collected using questionnaires and interviews. Descriptive statistics and Chi-square statistics were used to analyse quantitative data, while content analysis was used to analyse qualitative data. The study findings revealed at least 5 factors that negatively affect the successful implementation of the telecommunication tower projects and these are Projects Scope Management, Projects Time Management, Projects Cost Management, Projects Communication Management, and Human Related Factors. The study also revealed that these factors had an adverse impact on project scheduling hence resulting into project delays. Subsequently, it was revealed that delayed legal formalities led to excess project expenses in form of warehouse and rental charges for the piece of land. Additionally, the study findings revealed that poor project scope description had a negative effect on the proper and efficient planning of project resources. Finally, the study revealed that poor project procurement management led to inadequate resource availability hence affecting the project schedule due to lack of resources as subcontractors could not proceed with the projects in the absence of necessary materials. The study recommended organizations to invest more resources in ensuring that various factors that impend the successful implementation of the telecommunication tower projects are known, as well as invest in Research and Development and project managers to ensure comprehensive project planning and evaluation before the project is initiated. This would also help ensuring that various challenges that affect the project implementation process at various stages of project's implementation are mitigated.

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1. Introduction

The Zambian telecommunications industry is one of the fastest growing and changing markets, as evidenced by the tremendous increase in mobile cellular subscriptions from fifty thousand in the early 2000s to 17.9 million at the end of June, 2020, while mobile internet usage has increased from four hundred thousand in 2011 to 9.5 million subscriptions reported at the end of June, 2020 (Zambia Information and Communications Technology Authority (ZICTA), 2020) ^[44]. Mobile network operators are constantly under pressure to meet their subscribers' data-hungry demands. This surge in data consumption among customers is driving mobile network operators to expedite network rollout plans in order to meet coverage and capacity needs, either by

upgrading and extending existing networks or by implementing tactics targeted at remaining competitive in the sector. This has resulted in a 25.7 percent rise in the total number of active telecommunication tower sites in the country, from 8,227 at the end of June 2019 to 10,338 at the end of June 2020. (ZICTA, 2020) ^[44]. To discover variables influencing the effective execution of telecommunication tower projects in Zambia, the author investigates the history of the Zambian mobile telecommunications sector and the significance of project management.

The telecommunication tower projects in Zambia are conceived by the need of the mobile network operator to expand the existing network infrastructure in order to improve the coverage and capacity as quickly as possible to meet the upsurge in mobile cellular subscribers. The process starts with the acquisition of "Type Approval Regulations" from the Zambia Information and Communications Technology Authority as prescribed under regulation 17 of the ICT Act, statutory instrument number six (6) of 2011 (ZICTA, 2020) ^[44].

Prior to acquisition of type approval, the mobile network operator, through its network planning section, would carry out site surveys to establish and collect coordinates of suitable sites that are falling within the technically buildable environment. This is followed by acquisition of EIA approval from ZEMA which is provided for under the environmental management Act No 12 of 2011 which explicitly makes EIA as a requirement for all projects that may have an impact on the environment (Zema, 2016). Thereafter this can either be followed by the acquisition of council approval in accordance with the Town and Country Planning Act Chapter 283 of The Laws of Zambia or the acquisition of civil aviation clearance in accordance with the Aviation Act Chapter 444 of the laws of Zambia, failure to obtain the said clearances is the breach of the law and is therefore punishable.

Many businesses are faced with a stark reality of competition and are required to anticipate, respond and react to the growing demands of the marketplace in order to remain relevant (Ndemo, 2018) ^[29]. This in the telecommunication industry has led to mobile network operators to extensively rolling out telecommunication towers in order to extend and expand their networks' coverage and capacity as quickly as possible to meet subscribers' demand for better network quality and to target the potential subscribers (Duru and Alhasweh, 2013) ^[11]. Thus, project management has become a core competence that mobile network operators are seeking in order to excel in their telecommunication towers deployment projects. The application of project management in the Telecommunication industry has evolved in the last few decades (Ogunberu *et al.*, 2018; Mwanaumo *et al.*, 2020) ^[30, 28]. Project management has been embraced in the industry to proactively manage telecommunication projects such that expected objectives are fulfilled (*ibid*).

However, more efforts have been made in identifying and applying procedures, practices, standards, structures and methodologies towards achieving success in telecommunication project implementation in the industry (Ogunberu *et al.*, 2018; Mwanaumo *et al.*, 2020) ^[30, 28]. However, in line with (Yankovskaya *et al.*, 2021) ^[43], Sherif (2006) states that, like any other type of project, telecommunication project managers are faced with challenges of finishing the projects within schedule and budget. Project managers have to manage and control work

execution while wave-rolling planning projects, analysing new constraints and requirements, compressing time and costs.

1.2 Statement of the Problem

The process of implementing a telecommunications project is complicated, requiring simultaneous attention to a wide range of human, financial, and technological elements. According to Desmond (2003) ^[9], the project manager should give special attention to key process areas that are critical to the effective execution of telecommunications projects. Furthermore, Meyer (2015), as quoted by (Mukwa, 2016), contends that identifying these key process areas or critical success factors for project implementation is difficult and time-consuming, and Erling *et al.* (2006) contends that there is no clear proof linking a project success factor and actual project success.

Project delivery among mobile network operators, in particular, is failing to fulfil business and user demands owing to issues such as ill-defined scope, cost and time overruns, insufficient quality, and failure to meet promised features and functionalities to satisfy project stakeholders (CIO Magazine, 2001). In Zambia, despite the government's commitment and support towards universal access to ICT in rural communities with poor network coverage by embarking on 131 mobile communication tower construction in 2011 in conjunction with Airtel and the 2013 universal access projects by Zicta which had an expected project completion timeline of October 2014. The parliamentary committee on communications, transport, works and supply insisted that the phase one of the 2013 ZICTA rural telecommunication tower project is a failed project because ZICTA failed to adhere to the technical specifications and that out of a total of 204 towers only 169 towers were constructed, and more than 50 towers were non-functional by early 2015 (<https://www.lusakatimes.com-ministrerial-statement>).

Additionally, despite that, there is little documentation on telecommunication in Zambia, it has been acknowledged by professionals in the telecommunication industry that telecommunication projects fail to meet the business and user needs due to project schedule overruns or delays (Mwanaumo *et al.*, 2020) ^[28]. This is evidenced by the poor-quality network experienced by subscribers which led to Airtel, MTN and Zamtel been fined by ZICTA for providing poor service to subscribers (Zicta, 2020) ^[44]. Therefore, there is need to erect more towers to improve the network quality and capacity to meet subscribers demands.

As a result of research problem, the author proposed to investigate variables that influence the effective implementation of tower construction projects in this study. The study used both qualitative and quantitative methods to collect primary and secondary data and information with the goal of identifying important success factors that impact the execution of telecommunications projects in Zambia. Specifically, due to insufficient accessible documentation, a holistic strategy was used after detecting the existing gap on the underlying cause of project time overrun utilizing a triangulated or mixed research technique.

1.3 Research Aim

- To identify factors that affect the successful implementation of telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia Limited.

1.4 Research objectives

- To identify factors that affect the successful implementation of telecommunications projects at Airtel Networks Zambia Plc and IHS Zambia.
- To evaluate the impact of the identified factors and rank them according to their importance as perceived by stakeholders.
- To analyse the correlation between the selected factors and their contribution to the successful implementation of telecommunication tower project.

1.5 Relevance and Importance of the Study

This research sheds light on the competitiveness of Zambia's telecom business. On the one hand, this knowledge aided in understanding the current business climate in this sector, while the study findings will serve as lessons for other emerging nations in building their telecom sectors. Furthermore, the conclusions of this study would be beneficial to scholars, academics, and practitioners. The study's findings would also be useful to mobile network operators in planning ahead to ensure adequate measures are put in place to support telecommunications project implementation, and it may also be useful to new market entrants into the telecommunications industry who can use the research findings as a benchmark when attempting to implement the same kind of projects.

2. Review of related literature

2.1 Theoretical Framework

The study was guided by the Economic theory of institutions and the institutional theory:

2.1.1 Economic Theory of Institutions

According to this theory, a rational stance is one in which an agent maximizes their economic worth. The rationale is that the existence of choice and ideology, as well as the considerable influence of human contact through multiple cooperation, are the key emphasis. This thesis is based on the creation of "institutions and how they evolve affect the performance of economies through time" (North 2016). However, this approach has drawbacks when it comes to external variables like rivals that affect institutional changes. "When changes in social conditions are regarded exogenous, they are judged inexplicable within the economic model," says Boland (1979). As a result, because the technological development in telecommunications is exogenous, this theory is inappropriate for this investigation. This theory aided in explaining institutional associated factors influencing implementation of telecommunication tower projects in Zambia.

2.1.2 Institutional Theory

The use of institutional theory as a tool for analysis in this study demonstrates how institutions play a role in policy development and execution in order to facilitate technological progress in the telecommunications sector. "Institutional theory investigates the role of institutions and organizations in influencing economic policy, as well as how institutions change in response to a changing environment" (Berthod 2016; Ilukena *et al.*, 2023). The application of this theory has been accepted by Braathen (2004), who records

that the theory was applicable to analyse how 'institutions shape' the telecommunications sector, including human decisions and external influences. The focus on the telecommunications industries of Mozambique and Zimbabwe emphasizes the theory's usefulness in explaining how different levels of institutionalism influence governments' actions toward a given industry. The interplay between professionalism with neo-patrimonialism, in which the former assigns power and trust, particularly in Africa (Braathen, 2004). In retrospect, Braathen (2004) deviates from the scope of this study work by examining "the hierarchical connection between the sector leadership and the key professionals". Institutional theory examines the role of institutions in fostering infrastructural innovation and market change. Hence, this theory aided in explaining institutional associated factors influencing implementation of telecommunication tower projects in Zambia.

2.2 Factors that affect the successful implementation of telecommunications projects

This section reveals and classifies factors that mostly affect implementation of telecommunication tower sites. These factors are classified into four categories: Governmental regulation rules, laws and internal policies; Transmission technology and tower properties; Geographical and demographical factors; and finally, Company experience.

A study conducted by Khan *et al.* (2014) in Pakistan titled "Factors affecting the successful implementation telecommunication tower projects" Using an Exploratory analysis to develop constructs for project success factors and project success criteria in the public sector of a developing country like Pakistan and to explore the relationship between them. Through the exploratory analysis, the study revealed eight success factors and, five success criteria. Multivariate regression was used to investigate the relationship between the project success factors and success criteria identified. The regression results showed that seven success factors had a positive relationship with one or more of the success criteria. Top management support, organizational and managerial environment and project Characteristics showed the largest impact on project success. Only one factor, technical tasks had no impact on project success. The paper shows that existing project success factor and success criteria cannot be used without looking at the context in which they were developed, and it demonstrates the importance of personnel in projects by using project success factors variable obtained from human resource research (Khan *et al.*, 2014; Larina *et al.*, 2021; Yankovskaya *et al.*, 2021) ^[43].

In another study conducted by Saqibet *et al.* (2018) titled the "Assessment of Critical Success Factors for Construction Projects in Pakistan" a criticality index was used to identify construction success factors which in descending order of importance were found to be: Decision making effectiveness, Project Manager's experience, Contractor's cash flow, Contractor experience, timely decision by owner/project owner's representative, Site management, Supervision, Planning effort, Prior project management experience, and Client ability to make decision. However, this study did not identify the causal relationship between the construction success factors and the key project indicators.

Conversely, Asassfeh *et al.* (2018) in a study aimed at classifying and reviewing the factors that mostly affected the selection of telecommunication tower projects in India revealed various factors that were classified into the

following four categories; Technology Factors which included; Signal strength, Signal range ratio, Signal traffic, Band width, Congestion ratio, Capacity of services, Communication System Type (output), Geographical Factors in which encompassed; Soil erosion (Ability to access, site Electricity availability; Terrain (Flat area, Steep terrain, Barriers (building, tree), Slope Visibility, Higher area, Area, availability); Users (Population users' number, Type of users, Density of use, network), Regulation and Policy Factors which included; External matters, these involved issues such as Protected Areas (Archeological area, Environmental area, Health services area, Airplanes routes, Interact with other, signal Interact with electrical power, Public area, Gov. Strategic plan, Internal factors involved aspects such as Company policy which involved; (Institute Strategic plan, Management pressure, Lower prices, Better services), Budget (Land price, Maintenance cost, Construction cost, Agreements cost, Reward cost, reproduction cost new, Income prediction), and finally Resources factors which involved issues such as; (HR Experience, Vehicles, Cranes, and Electronic power motor). Data and Experiences Factors: Experience (Company historical data, other institutes, historical data, Scholar resources).

Mwanaumo *et al.* (2020) ^[28] conducted a study with the aim of investigating the causes of time overrun in

telecommunication projects in Zambia and reviewed that poor planning as the main cause of project schedule overrun. Perić *et al.* (2021) in quoting Denicol *et al.* (2020) and Do Vale *et al.* (2018) states that human resources (knowledge, skills, and competencies) are often highlighted as the most important resources and determinants of project success or failure. This is linked to leadership and coaching, by which a project manager with developed leadership and coaching skills guides participants in the project process to a successful ending, by motivating them and providing them with the knowledge and skills needed, while shaping future project managers through continuous learning (Perić *et al.*, 2021; Handema & Haabazoka, 2020).

2.3 Conceptual Framework and Hypothesis Development

The conceptual framework presented in Figure 1 guided this research. This demonstrates how project success is connected to independent factors such as project scope management, project time management, project cost management, project procurement management, and project communication management. Human-related factors are used as a moderating variable to moderate the relationship between project management practices and the implementation of telecommunication tower projects.

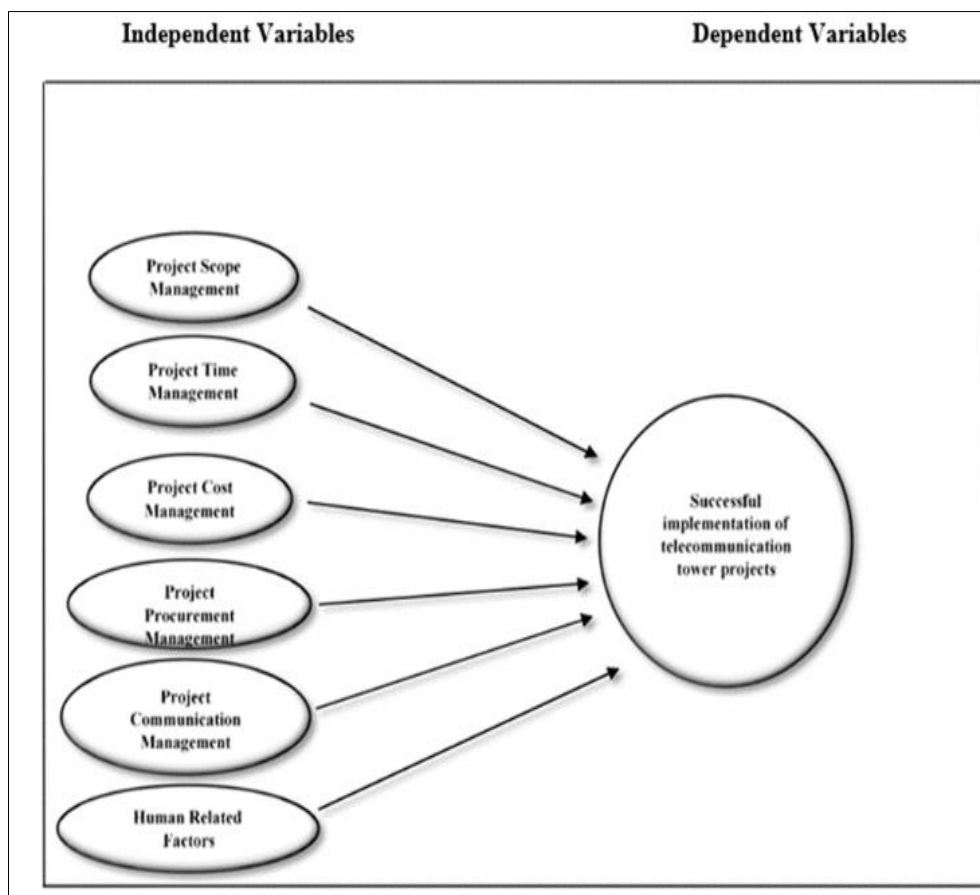


Fig 1: Conceptual framework

Guided by reviewed literature and the conceptual framework, the following hypotheses were formulated:

H1: Project Scope Management significantly affects the successful implementation of telecommunication projects at IHS and Airtel Zambia.

H2: There is a significant relationship between Project Cost

Management and the successful implementation of telecommunication projects at IHS and Airtel Zambia.

H3: There is a significant relationship between Project Procurement Management and the successful implementation of telecommunication projects at IHS and Airtel Zambia.

- H4: Project Communication Management significantly affects the successful implementation of telecommunication projects at IHS and Airtel Zambia.
- H5: Human Related Factors have significant impact on the successful implementation of telecommunication projects at IHS and Airtel Zambia.
- H6: Project Time Management significantly affects the successful implementation of telecommunication projects at IHS and Airtel Zambia.

3. Research methods

The study employed pragmatism research paradigm in line with the mixed-method research approach. This led to the researcher getting deeper understanding of the problem. Purposive sampling was used for the recruitment of the firms to be sampled in the study where the firms were purposively selected based on the researcher's convenience namely AIRTEL and IHS Zambia Limited. Stratified sampling was also used to obtain the quantitative data from the rest of the professionals from the same organisations. Sixteen professionals with the desired qualities were selected representing the sample size for the study. In order to identify factors that affect the implementation of telecommunication projects in Zambia both primary and secondary data sources were utilised. Primary data were collected using questionnaires and interviews. Secondary sources of information included the internet, a review of published and unpublished books, journals, newspaper articles, official reports. The secondary data from statistical reports was done by analysing prior empirical studies.

Because of the nature of the study, the data collected for this study were both quantitative and qualitative in nature thus both quantitative and qualitative data analysis techniques were considered to develop conclusions to the study. This was done using the statistical software known as the Statistical Package for Social Scientists (SPSS) version 25. The quantitative data analysis was done using both descriptive and inferential statistics. The descriptive statistics involved the use of mean, standard deviation, percentile and frequencies to establish both the demographic information. The Chi-square tests were conducted. The qualitative data from open ended questions were analysed using the content analysis technique. Through content analysis, responses from different respondents were compared and summarized according to the study's research questions.

Validity and reliability were enhanced through methodological triangulation. All ethical issues were considered during data collection such that before data collection process, a reference letter was obtained from the Research Ethics Department to allow for field data collection from the study participants. Upon commencement of the interviews, the respondents were also previewed of the purpose of the study as well as the use of the collected data.

The respondents were also made aware of their voluntary participation in the study and that withdraw could be made at any point that they felt like withdrawing from the study. Finally, anonymity of research study participants was also maintained throughout the study.

4. Results and Discussion

This part of the study presents the findings and discussion of the findings of the study in order of the study objectives.

4.1 Demographics of respondents

Table 1 presents the demographics of the study participants.

Table 1: Demographics of the study participants

Variable	n	%
Position		
Manager	3	18.8
Finance staff	2	12.5
Technical staff	8	50.0
Other	3	18.8
Education		
Bachelor's degrees	6	37.5
Postgraduate degree	10	62.5
Years of professional experience		
Less than 5 years	1	6.3
5-10 years	5	31.3
11-15 years	4	25.0
16-20 years	5	31.3
Over 20 years	1	6.3

Source: Author (2022)

Table 1 presents the frequency distribution of the study participants. As revealed, the majority 8 (50%) of the study participants during the time of the study being Technical Staff, indicating the majority 10 (62.5%) of the study participants indicating having attained their postgraduate degree during the time of the study. Further findings revealed that the majority 14 (87.6%) of the study participants were within 6-20 years of their work experience in their professional careers as shown in Table 1.

4.2 Factors that affect the successful implementation of telecommunications projects at Airtel Networks Zambia Plc and IHS Zambia

The study also sought to identify the factors that affect the successful implementation of the telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia. The data on factors that affect the successful implementation of telecommunication tower projects is presented in Table 2 below. The acceptance mean point for the items in the data collection tool was set at 1.50, any mean (\bar{x}) value that was below < 1.50 was regarded as rejected.

Table 2: Mean scores of the factors that negatively affect telecommunication tower projects

Item No	Statement	(\bar{x})	SD
1	Project Scope Management negatively affects the successful implementation of the telecommunication tower projects.	2.00	1.00
2	Project Time Management negatively affects the successful implementation of the telecommunication tower projects.	1.60	.828
3	Project Cost Management negatively affects the successful implementation of the telecommunication tower projects.	1.80	.862
4	Project Procurement Management negatively affects the successful implementation of the telecommunication tower projects.	1.47	.834
5	Project Communication Management negatively affects the successful implementation of the telecommunication tower projects.	2.13	.834
6	Human Related Factors negatively affects the successful implementation of the telecommunication tower projects.	1.93	.884

Source: Field data

Tables 2 above reveal that at least 5 factors in the unshaded rows negatively affect the successful implementation of the telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia which are; 1-Projects Scope Management, 2-Projects Time Management, 3-Projects Cost Management, 5-Projects Communication Management, and 6-Human Related Factors whose means were equal to or above the set standard confidence interval of ≥ 1.50 thus indicating statistically significant relationship between these variables. Furthermore, among the factors that negatively affect the successful implementation of telecommunication tower projects, the mean value for Project Procurement Management was rejected thus indicating a non-statistically significant relationship between Project Procurement Management and the successful implementation of telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia as shown above respectively.

Interviews revealed that some of the other factors that affect the successful implementation of telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia. It was revealed in the study that among other factors that affect the successful implementation of telecommunication tower projects include the red tape that is as a result of "delayed statutory clearance", this include some of the legal procedures and formalities that have to be taken into consideration before or while the project is being initiated such as council approvals, and site acquisition among others. For instance, some of the study respondents contended as follows:

"Delayed ZEMA/Council approvals as well as Site acquisition challenges."

"Statutory clearance from government agencies like ZEMA and the council."

"Timely approvals and clearance of EPBs by regulatory bodies like Zambia Environmental Management Agency - ZEMA."

The red tape in Regulatory institutions and inertia in other related authorities are the other factors

Besides the above, the study also revealed that some respondents in the study were of the view that "Poor Management and limited man power" in general was among the biggest challenges that exerted a lot of irregularities to the successful implementation of telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia. This therefore means lack of proper management in terms of assignments of stakeholders such as subcontractors, limited human resources to manage particular tasks, assigning individuals who have little understanding of the nature of the project's initiation records, poor record tracking leading to scanty project data availability, and poor cost and procurement management are among the main challenges to telecommunication tower projects.

Mwanaumo *et al.* (2020) ^[28] also hold similar sentiments as they state that like any other type of a project, telecommunication project managers are also faced with challenges in regards to the timely project completion according to the project budget and schedule. Furthermore, project managers should manage and control the work execution while at the same time wave-rolling planning projects, analyzing new and emerging challenges during project implementation and requirements, and compressing time and costs (Mwanaumo *et al.*, 2020) ^[28]

Through an exploratory analysis Khan *et al.* (2014) found similar results as the study revealed eight success factors and, five success criteria. The results of their study showed that seven success factors had a positive relationship with one or more of the success criteria. For instance, top management support, organizational managerial environment and project Characteristics showed the largest impact on project success. Only one factor, technical tasks had no impact on project success. The study also shows that existing project success factor and success criteria cannot be used without looking at the context in which they were developed and it demonstrates the importance of personnel in projects by using project success factors variable obtained from human resource research (Khan *et al.*, 2014).

4.4 Impact of the identified factors on the successful implementation of telecommunication tower project

Furthermore, the study aimed to evaluate the impact of the identified factors on the successful implementation of telecommunication tower projects. The Chi-square test was therefore undertaken and the results are presented in Table 3.

Table 3: Chi-square results

Variable Category	Chi-Square Value	df	P-Value (2-sided sig)
Human Related Factors negatively affects the successful implementation of the telecommunication tower projects, Project Communication Management negatively affects the successful implementation of the telecommunication tower projects.	6.444 ^a	4	.168
Project Scope Management negatively affects the successful implementation of the telecommunication tower projects, Project Time Management negatively affects the successful implementation of the telecommunication tower projects. Crosstabulation	6.533 ^a	4	.163
Project Cost Management negatively affects the successful implementation of the telecommunication tower projects, Project Scope Management negatively affects successful implementation of the telecommunication tower projects.	4.275 ^a	4	.370

Source: Field data

The results in Table 3 reveal non-statistically significant relationship between Human Related Factors negatively affects the successful implementation of the telecommunication tower projects, Project Communication Management negatively affects the successful implementation of the telecommunication tower projects, Project Scope Management negatively affects the successful implementation of the telecommunication tower projects, Project Time Management negatively affects the successful implementation of the telecommunication tower projects, Project Cost Management negatively affects the successful implementation of the telecommunication tower projects, Project Scope Management negatively affects the successful implementation of the telecommunication tower projects (X=6.444, *P-value*=0.168, *df*=4; X=6.533, *P-value*=0.163, *df*=4; X=4.275, *P-value*= 0.370) but one based on chance. Thus, these results indicate that the impact of these factors on the successful implementation of the telecommunication tower projects at Airtel Networks Zambia Plc and IHS Zambia is highly contextual depending on the degree of attention provided towards each factor by the project implementers and all stakeholders involved in project implementation at a given time.

These findings are similar to the sentiments held by Vasista (2017) who also asserts that a major contribution to unsuccessful projects is the lack of understanding on scope, time, cost and quality. Furthermore, Zulch (2014) also found similar findings where he attests that the project managers' skill to communicate has an impact on the cornerstone areas of project management. Communication is needed to effectively communicate the areas of cost, scope and time, and quality, which are the results of the interrelationship between scope, cost and time. Communication is the function that integrates cost, scope and time to achieve a quality product and may be seen as having a foundation function (Zulch, 2014). Furthermore, Mirza *et al.* (2013) also attest to the fact the lack of project scope description is a huge contributor to many project failures. Subsequently, like Ogunberu *et al.* (2018) who found that resource allocation and project duration had a significant impact on project's success, the present study findings also revealed that sometimes additional materials and accessories maybe needed which in turn has an impact on the pre-planned project duration, likewise, project schedule is disturbed when

tasks are not assigned properly.

5. Conclusions and Implications

The main objective of this study was to identify factors that affect the successful implementation of telecommunication projects at Airtel Networks Zambia Plc and IHS Zambia Limited. Based on the findings, the study concluded that the main factors affecting the implementation of telecommunication tower projects success include; 1-Projects Scope Management, 2-Projects Time Management, 3-Projects Cost Management, 4-Projects Communication Management, and 5-Human Related Factors. Furthermore, it can be concluded that other factors that have got a negative bearing on the successful implementation of telecommunication tower projects include red tape, legal procedures and formalities and lack of proper management. The study further concluded that there is a non-statistically significant relationship exists between the selected factors and successful implementation of telecommunication tower projects. The research recommended the management of the telecommunication firms to invest more resources in means that would ensure that they are aware of the various factors that impend successful implementation of the telecommunication tower projects. The other recommendation made is that project managers need to ensure that comprehensive project planning and evaluation is well established right before the project is initiated.

6. References

1. Aker JC, Mbiti I. Mobile Phones and Development in Africa. *J Econ Perspect.* 2010; 24(3):207–232.
2. Aminah YM, Chai CS. Reclassifying Housing Delivery Delay Classification. *Int J Bus Manag.* 2013; (107-117).
3. Asassfeh JA, Fadiya SO, AlTarawneh M. Reviewing and Classifying the Effective Factors in Selection Telecommunication Antenna Towers Sites. *Int J Digit Inf Wireless Commun.* 2018; 7(3):178-183.
4. Azis AA, Memon HA, Rahman IA. Time and Cost Performance in Construction Projects in Southern and Central Regions of Peninsular Malaysia. *Int J Adv Appl Sci.* 2012; 45-52.
5. Berthod O. Institutional Theory of Organizations. Accessed July 21, 2021.
6. Boland LA. Knowledge and the Role of Institutions in

- Economic Theory. *J Econ Issues*. 1979; 13(4):2-4. Accessed July 21, 2021.
7. Braathen E. Institutions Matter: Engineers and Telecommunication Development in Mozambique and Zimbabwe. *Telematics Inform*. 2004; 21(2):25-47. Accessed July 2, 2021.
 8. Damsgaard J, Gao P. A Framework for Analyzing Mobile Telecommunications Market Development. *J Electron Commerce Res*. 2007; 8(3):186-193. Accessed July 18, 2021.
 9. Desmond J. *Journal of Customer Behaviour*. 2003.
 10. Deutsche Bank. *Telecoms for Beginners: Technology & Industry Primer*. Global Equity Res. 2004.
 11. Duru L, Alhasweh M. Improving Project Management Performance: A Case Study of Mobile Telecom Site Rollout Project in MTN Syria. Accessed July 5, 2022, from <http://www.diva-portal.se/smash/get/diva2:606204/FULLTEXT01.pdf>.
 12. El-Rasas TI, Marzouk MM. Analyzing delay causes in Egyptian construction projects. *J Adv Res*. 2014; 49-55.
 13. Fageha MK, Aibinu AA. Managing project scope definition to improve stakeholders' participation and enhance project outcome. *Proc Soc Behav Sci*. 2013; 74:154-164.
 14. Groenewegen JPM, Kunneke RW. Process and Outcomes of the Infrastructure Reform: An Evolution Perspective. In: *Institutional Reforms, Regulation and Privatization: Process and Outcomes in Infrastructure Industries*. United Kingdom: Edward Elgar Publishing Limited; 2005. p. 321-344.
 15. Hacker M, Doolen T. Alignment at the Top: A Case Study Investigating This Critical Factor in Project Implementation. *Eng Manag J*. 2007.
 16. Handema M, Haabazoka L. The Effect of Capital Structure Management on Commercial Bank Financial Performance: A Case of the Zambian Banking Sector. In: Popkova EG, Sergi BS, editors. *Scientific and Technical Revolution: Yesterday, Today and Tomorrow*. Springer International Publishing; 2020. p. 1716-1736. https://doi.org/10.1007/978-3-030-47945-9_183.
 17. Heldman K. *Project Management Professional (PMP) Exam Study Guide*. Wiley Publishing; 2005.
 18. Ilukena M, Haabazoka L, Chowa T. Environmental Factors' Moderating Effect on Intangible Organizational Resources and Performance of Insurance Brokers in Zambia. In: Popkova E, editor. *Smart Green Innovations in Industry 4.0*. Springer Nature Switzerland; 2023. p. 221-228. https://doi.org/10.1007/978-3-031-45830-9_25.
 19. Kafile M, Fore S. Effects of Procurement Processes on Project Execution in A Project Management Company in Cape Town, South Africa. *Int J Bus Adm Stud*. 2019; 4(4):176-186. doi: <https://dx.doi.org/10.20469/ijbas.4.10005-4le->.
 20. Kaliba C, Muya M, Mumba K. Cost Escalation and Schedule Delays in Road Construction Projects in Zambia. *Int J Proj Manag*. 2009; 522-531.
 21. Khan KA, Maqsoode T. Factors that influence the success of public sector projects in Pakistan.
 22. Kothari R, Sharma A, Rathore J. Service quality in cellular mobile services: An empirical study of cellular mobile Users. *Vidwat*. 2011; 4(11).
 23. Larina L, Postnikova D, Ageeva O, Haabazoka L. The Scientific and Methodological Approach to Provision and Evaluation of the Digital Economy's Global Competitiveness. In: Popkova E, Krivtsov A, Bogoviz A, editors. *The Institutional Foundations of the Digital Economy in the 21st Century*. Berlin, Boston: De Gruyter; 2021. p. 173-182. <https://doi.org/10.1515/9783110651768-019>.
 24. Mirza MN, Pourzolfaghar Z, Shahnazari M. Significance of scope in project success. *Procedia Technol*. 2013; 9:722-729.
 25. Mohamed. *Managing Projects in Telecommunication Services*. 2017. pp. 1-7. Hoboken.
 26. Muhammed HC, Muhammet AA. Optimization of Project Scheduling Activities in Dynamic CPM and PERT Networks Using Genetic Algorithms. *J Nat Appl Sci*. 2018; 616.
 27. Müller R, Turner R. Leadership competency profiles of successful project managers. *Int J Proj Manag*. 2010; 28(5):437-448.
 28. Mwanaumo EM, Mambwe M, Mwanza BG, Sibalwa E. An Investigation of Factors Causing Schedule Overrun in Telecommunication Projects in Zambia. In: *Proceedings of the 2nd African International Conference on Industrial Engineering and Operations Management, Harare, Zimbabwe, December 7-10, 2020*; 2020.
 29. Ndemo B. The antecedents of innovativeness in small and medium manufacturing enterprises in Kenya: A critical review of literature. *Afr J Bus Manag*. 2018.
 30. Ogunberu AO, Akintelu SO, Olaposi TO. Application of project scope management practices on project success among telecommunication organizations in Nigeria. *Int J Dev Sustain*. 2018; 7(2):518-532.
 31. Olawale YA, Sun M. Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice. *Constr Manag Econ*. 2010; 509 – 526.
 32. Perić M. *Project management and public-private partnership in tourism*. Unpublished doctoral dissertation, University of Rijeka; 2009.
 33. Pinto J. *Project Management: Achieving Competitive Advantage*. London: Pearson Education; 2010.
 34. PMBOK. *Guide to the Project Management Body of Knowledge. PMBOK Guide - Fifth Edition*. Project Manag Inst. 2013.
 35. PMI. *A Guide to the Project Management Body of Knowledge*. 6th ed. Newtown Square (PA): Project Management Institute; 2017.
 36. PMI. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. 4th ed. Pennsylvania: Project Management Institute, Inc.; 2008.
 37. Remon AF. Ranking of delay factors in construction projects after Egyptian revolution. *Alexandria Eng J*. 2013; 387-406.
 38. Saqib, Lodi, Farooqui. Assessment of critical success factors for construction projects in Pakistan. 2018.
 39. Sindiga LK, Paul SN, Mbura LK. Influence of procurement management practices on performance of construction firms in Nairobi County, Kenya. *Int Acad J Procure Supply Chain Manag*. 2019; 3(1):143-163.
 40. TRAI. *Indian Telecom Industry*. 2006. [Online]. Available from: <http://www.dnb.co.in/IndianTelecomIndustry/Overview/OverviewTI.asp>.
 41. Vasista TGK. *Strategic Cost Management for Construction Project Success: A Systematic Study*.

- CiVEJ. 2017; 4(1):March 2017.
42. Wysocki RK. Effective Project Management: Traditional, Agile, Extreme. 5th ed. Wiley Publishing, Inc.; 2009.
 43. Yankovskaya VV, Osavelyuk EA, Inozemtsev MI, Haabazoka L. The existing and perspective international institutions for supporting digital transformation of economy. In: The Institutional Foundation of the Digital Economy in the 21st Century. 2021. p. 165–172.
 44. Zambia Information & Communications Technology Authority. ZICTA –About Us. Retrieved from ZICTA: http://www.zicta.zm/index.php?option=com_content&view=article&id=49&Itemid=92; 2015.
 45. Zambia Information and Communications Technology Authority. Annual report, advancing the nation to a digital society. 2020. Retrieved from <https://www.zicta.zm/storage/posts/attachments/VBLO7yFUYGKGjGXCZMOTTkpXCD6iUL9quUoOi4fe.pdf>.
 46. Zulch BG. Communication: The foundation of project management. In: CENTERIS 2014 - Conference on Enterprise Information Systems / Projman 2014- International Conference On Project Management / HCIST 2014 International Conference On Health And Social Care Information Systems And Technologies; 2014.