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Critical Success Factors Contributing to Road Project Success in Tanzania. A Case Study of Tanzanian National Roads Agency-TANROADS

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Abstract

In Tanzania, there is a knowledge gap in critical success factors for the implementation of road projects. This study aimed to assess how project critical success factors are evaluated in Tanzania. Semi-structured questionnaires were used to collect primary data from the Tanzania National Roads Agency (TANROADS). The top ten (10) critical success factors from the research findings are appointing a competent project manager, allocating sufficient resources, top and general management support, on-site project manager, client consultation, project mission, goals, philosophy, client acceptance, communication and procedures, goal commitment of the project team and schedule. It was recommended that effective communication and procedures, commitment to the project goals, cutting-edge knowledge to do cost estimations to increase efficiency, the appointment of competent project managers, the existence of on-site project managers, stakeholder engagement, sufficient resources, top and general management support and less political influence be strengthened to achieve road project performance.

Keywords: Critical Success Factors; Road Project Success; TANROADS; Tanzania

1. Introduction

Projects are “temporary efforts to create value through unique products, services, and processes” (Project Management Institute, 2023). Projects are very important because, without them, organizations would become obsolete, irrelevant, and unable to cope with today’s competitive business environment (Shenhar, Dvir, Levy, & Maltz, 2001). Consequently, the importance of projects in gearing up the organization to remain competitive in today’s business environment underlines the importance of understanding factors contributing to its success.

A project is successful when it has met the budget, time, and goals (Shenhar, Dvir, Levy, & Maltz, 2001). However, Shenhar, Dvir, Levy, & Maltz(2001) added that four dimensions of project efficiency, impact on the customers, direct and business success, and preparing for the future need to be taken into consideration when evaluating project success. Numerous factors contribute to project success. These include clarity of the project mission, top management support, project schedule, client consultation, personnel (Personnel: recruitment, selection, and training for the

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project team.), availability of the required technology and expertise, client acceptance, monitoring and feedback, communication, and troubleshooting (Pinto & Slevin, 1987).

Economists reported infrastructure spending to be the biggest portion of the world's GDP. For instance, in 2009, the investment in infrastructure was projected to be $22 trillion in the next decade in emerging economies alone (Bent, Massimo, & Dan, 2009). In Africa, in 2019, 50 African countries committed $34.9 billion with $18.7 allocated to the transport sector (The Infrascturre Consortium for Africa, 2023). Infrastructure is a fundamental factor of the Global Competitive Index – an index which asses the ability of countries to provide living standards to their population. Highly quality-roads enable people to get connected to the markets to access goods and services promptly (Mejía, Sánchez, Castañeda, & Pellicer, 2019). In Tanzania, road transport is the major mode of transportation carrying over 90% of the passengers and over 75% of the freight traffic in Tanzania (JICA, 2014). Better road infrastructure enables people to access education, health and employment facilities both in urban and rural areas (Mejía, Sánchez, Castañeda, & Pellicer, 2019). Hence, national road infrastructure projects and strategies are fundamental to improving living standards in every country.

Infrastructure development is a key driver of progress across Africa and an enabler of sustainable economic growth and productivity (African Development Bank, 2023). For instance, roads are the main mode of transport carrying at least 90% of goods and 80% of passengers in Africa (African Development Bank, 2023). In Kenya and Ethiopia, investment in road infrastructure drove structural transformation by enabling more livelihoods in services and manufacturing and reducing dependency on low-productive agriculture (Vivien & Mathilde, 2022). Consequently, the efficiency of infrastructure planning and execution is therefore particularly important at present (Bent, Massimo, & Dan, 2009).

Infrastructure project failures are a hot debate among academicians, project management professionals, and researchers worldwide. The public sector, the private sector, and private/public sector partnerships have a dismal record of delivering on large infrastructure performance promises and costs (Bent, Massimo, & Dan, 2009). Misinformation about cost is apparent in large infrastructure planning (Flyvbjerg, 2005). Cost overrun has been a regular problem in major projects. In a study conducted by Flyvbjerg, Holm, and Buhl (2003) on over 250 large infrastructural projects in different countries and different periods, it was found that with the average overrun of 28%, 86% of the projects had cost overruns compared to forecasted costs (Brunes & Lind, 2014). While for road projects the cost overrun was 20%, it was 45% in the rail projects (Brunes & Lind, 2014). Europe recorded the lowest cost overrun compared to North America and geographical areas (Brunes & Lind, 2014). Some road projects have produced no economic gains for recipient countries. For instance, the construction of the Garoe-Bosaso road in Somalia stretching 450 kilometres across a barren desert cost $250 million from the World Bank but is only being crossed by nomads on foot (Nahashon, 2018).

Failure of road infrastructure projects is a global issue. Looking at cost overruns, for instance, about 90% of transportation network projects face cost overruns resulting in cost escalation (Ammar, Abdel-Monem, & El-Dash, 2022). For instance, Central Artery/Tunnel in Boston (USA) constructed between 1991 and 2007 incurred a total cost overrun of $11 billion, representing a 275% overrun (Ammar, Abdel-Monem, & El-Dash, 2022). Cost overrun in road network projects was observed in main projects in different developed and developing countries. The cost overrun was 47.57% for the Jakarta MRT project in Indonesia, 54% for the Great Belt link in Denmark, 67% for the underground subway in Thailand, 68 % for the Øresund link in

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Sweden &Denmark, 71% for the Jubilee Line Extension in the United Kingdom, 100% for the Japanese Bullet Train in Japan, 111% of the Channel Tunnel project in the United Kingdom, 115% for Stuttgart 21 Metro Station in Germany, and 175% for the Humber bridge in the United Kingdom (Ammar, Abdel-Monem, & El-Dash, 2022). In Asia, the average cost overrun was 24.95 % in Thailand, 8.44% in Bangladesh, 26.14% in India and 5.41% in China (Ammar, Abdel-Monem, & El-Dash, 2022).

Various critical factors causing cost overrun were identified. Project location, incorrect estimation, the difference between the winning bid and the second bid, and contract amount are claimed to have caused cost overrun in the USA (Ammar, Abdel-Monem, & El-Dash, 2022). Replacement of unsuitable materials, unforeseen conditions, increasing quality measures, tender price changes, and design changes triggered cost overruns in Australia (Ammar, Abdel-Monem, & El-Dash, 2022). In the UK, unforeseen works, stakeholder requirements, design changes, and Inflation caused cost overruns. In Brazil, planned construction costs, design mistakes, availability of labor, variation orders and terrain and weather conditions are behind the incurred cost overrun (Ammar, Abdel-Monem, & El-Dash, 2022). Design changes, regulations, permits, and latent conditions caused cost overruns in Canada while in Vietnam, cost overruns were caused by design changes, bidding methods, geological conditions, owners' financial difficulties, inaccurate tender offers, and fluctuation (Ammar, Abdel-Monem, & El-Dash, 2022). In Nigeria, cost overruns were caused by design changes, inaccurate cost estimates, variations, changes in policies, exchange rates, fluctuation, and inflation (Ammar, Abdel-Monem, & El-Dash, 2022).
Road infrastructure project failure is an issue in Africa. Cost overrun is a common problem in construction projects worldwide. It is a challenge that ovestrecteched the budgets had a direct negative impact on the affects the country's gross domestic product (GDP). The issue of cost overrun was observed in road network projects in Egyp during the project implementation phase. Causes of project cost overrun in this case are changes in the scope of work, specification changes, inflation, political interference, variation orders, quantity changes, design modifications, and inaccurate cost estimates (Ammar, Abdel-Monem, & El-Dash, 2022). The rate of cost overrun (difference between planned and actual costs) was about 34%. In Malawi, construction of road projects faced delays due to a shortage of construction materials, insufficient contractor cash flow, and delay in relocating utilities among many other causes. The same causes caused delays in road construction projects in Swaziland and Botswana (Kamanga & Steyn, 2013). In Nigeria, the Enugu-Onitsha highway road was abandoned due weak financial base of the contractors, low supervision and change in administration mong other causes during the implementation phase and disrupted economic activities (Ezenekwe & Uzonwanne, 2017). In Zambia, scope changes, and schedule delays caused cost overruns while construction mistakes, equipment unavailability, staffing problems, and poor supervision caused schedule delays in road construction projects (Kaliba, Muya, & Mumba, 2009).

Road infrastructure project failure is an issue in Tanzania. Road construction projects in Tanzania faced delays. Delays were caused by political interference, inadequate site management, unrealistic work schedules, and delays in payment (Kullaya, Alemu, & Yeom, 2022). Problems of time overruns and cost overruns in road construction projects were confirmed in Tanzania (Ndunguru, Niyonyungu, & Yang, 2020). Inaccurate estimates, weather, lack of project management experience, change in the scope of the project, poor procurement processes, and poor organizational structures among other factors caused time overruns, while unexpected inflation, fluctuation in prices of material, high cost of machinery, mistakes during construction, fluctuation

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in the money exchange rate and lack of coordination at the design stage, among other factors, triggered cost overruns (Ndunguru, Niyonyungu, & Yang, 2020). Road construction delays were also confirmed by Simon (2017) in the Case study of TANROAD Dar es Salaam City.

2. Literature Review

2.1. Introduction

Experienced project managers and researchers generated critical success factors which are felt to be crucial to achieve a project's success. In a study conducted by Martin (1976), it was found out that project goals, project organizational philosophy, general management support, organization and delegation of authority, selection of project team, allocation of sufficient resources, provision of control and information mechanisms, planning and review critical success factors that affect project success (Prabhakar, 2008). In a study conducted by Lock (1984), making project commitments known, project authority from the top, appointing a competent project manager, setting up communications and procedures, setting up control mechanisms (schedules, etc.), progress meetings, were found out to be critical project success factors (Prabhakar, 2008).

In a study conducted by Cleland and King (1983), project summary, operational concept, top management support, financial support, logistics requirements, facility support, market intelligence, project schedule, executive development and training, acquisition, information and communication channels, project review were cited to be critical factors affect project success (Prabhakar, 2008). In a study conducted by Sayles and Chandler (1971), project manager's competence, scheduling, control systems and responsibilities, monitoring and feedback, and continuing involvement in the project were claimed to be critical factors affecting project success (Prabhakar, 2008). In a study conducted by Baker, Murphy and Fisher (1983), it was found out that clear goals, goal commitment of project team, on-site project manager, adequate funding to completion, adequate project team capability, accurate initial cost estimates, minimum, start-up difficulties, planning and control techniques, task (vs. social orientation), and absence of bureaucracy critically affect project success (Prabhakar, 2008).

In their study, Morris, and Hough (1987) found out that project objectives, technical uncertainty.
Innovation, politics, community, involvement, schedule duration urgency, financial contract legal problems, and implementation problems critically affect project success (Prabhakar, 2008). In the study conducted by Pinto & Slevin (1987), ten (10) isolated critical success predictive of successful project management include project mission (clear goals understood by the project team and other departments within the organization), top management support (, allocation of sufficient resources (including financial, manpower, time, etc.) project schedule/plan (the degree to which time schedules, milestones, manpower, and equipment requirements are specified), client consultation(user of project results), personnel recruitment, selection and training, technical tasks (skills and technology), client acceptance, monitoring and feedback (control processes at each stage of the project), communication (internal and external) and troubleshooting(risk management plan).

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Ten critical success factors which affect project implementation success were validated to affect the entire project life cycle. In another study conducted by Pinto & Slevin (1988), it was proved that ten critical success factors which affect project implementation success also affect project success during the entire project cycle at varying degrees. During project conceptualization, project mission and client consultation are critical. During the planning phases, project mission, top management support, and client acceptance are paramount. During the execution phase, the project mission, characteristics of the project team leader, troubleshooting, project schedule/ plans, technical tasks, and client consultation are critical. During the termination phase, technical tasks, project mission, and client consultations are critical to achieving success (Pinto & Slevin, 1988).

In all the above studies, the project manager was identified to be a common important leading factor to achieve project success.

2.2. Empirical Literature Review

Road project failure rate continues to be an important issue with an alarming rate despite the growing understanding of the concept of effective project management maturity and a steady stream of successful projects (Anbari & Kwak, 2004)**.** Road project failure is a global issue. Looking at cost overrun, for instance, cost overrun in road network projects is widespread in both developed and developing world. For instance, Cost overrun was observed in Indonesia, Denmark, Thailand, in Sweden, UK, Japan, Germany and the USA (Ammar, Abdel-Monem, & El-Dash, 2022) and above 50% in Tanzania (Chamuwange & Ning, 2022).

Critical factors affecting cost overrun in road projects are multiple. Cost overrun was caused by difference between winning bid and second bid, contract amount, design changes, project location, incorrect estimation, stakeholder requirements, weather conditions, fluctuation, changes in policies, availability of labor unforeseen conditions, duration and size, project location, site conditions, estimator's inexperience, procedures of disputes and claims, delays in payment, inflation rate and project type (Ammar, Abdel-Monem, & El-Dash, 2022).

Road projects also face delays. In 14 studies conducted in Africa and Asia, it was found that developing countries with, and with a GDP per capita ($US2018) <= $ 2,000, may experience different project delays depending on the economic and geographical contexts (Mejía, Sánchez, Castañeda, & Pellicer, 2019). In African countries with a Global Competitiveness Index -GCI <= 56, factors contributing to project delays are financial issues of the project owner, as well as delays due to equipment/material issues of the project supplier/subcontractor (Mejía, Sánchez, Castañeda, & Pellicer, 2019). On the other hand, in Asian countries with a GCI between 62 and 49, road projects may experience delays due to financial issues of the project contractor and delays due to planning issues of the project designer/consultant (Mejía, Sánchez, Castañeda, & Pellicer, 2019).
In Tanzania, while several works of literature on project success factors exist, most focus is on factors causing delays in road construction projects (politician's interference, poor management of the construction process, inadequate designs, involvement/performance of other parties, resources availability, contractual relations and environmental conditions (Simon, 2017), the causative factors and consequences effects of time overrun in road construction projects in Tanzania are competence of the consultant, external elements, competence & project management of the contractor and administration & financial management of the owner (Mang'wela & John, 2017); analysis of main causes of delays in the completion of road construction projects(factors related

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to client-related, consultant-related, contractor-related, design-related, and external factors (Kullaya, Alemu, & Yeom, 2022); assessment of the causes for delay in completion of road construction project in Tanzania: poor designs, inaccurate site investigation, poor definition of the essence of the project, change in the scope, improper supervision, political interference and contractors lacking financial and technical capacity (Konzo, 2020) , factors affecting the cost management of road construction projects(delays) (Chamuwange & Ning, 2022) , assessment of the factors causing a delay in completion of road construction projects in Tanzania(inadequate supervision) (Egina, 2021). However, little attention has been paid to how project success factors can be assessed in road projects in Tanzania, the lack of which limits the determination of whether road projects implemented are succeeding or not and limits the interventions to keep tracking project success.

Various indicators were used in assessing road project performance in Tanzania. For instance, in the study conducted by the USAID on "Performance Evaluation of Phase 1 of the Rural Road Development Project in Tanzania", key performance indicators used were "1) the demographic reach of the rehabilitated roads; 2) changes in prices of agricultural inputs, consumer goods, and passenger transport; 3) changes in transport costs to market; 4) changes in vehicle operational costs; and 5) capacity development of district engineers and the sustainability of project activities (USAID, 2018). In the study conducted by Ndyalusa (2021), economic performance through ecological, social, and demographic influences was considered the key performance indicator.

3. Research Methodology

The study was conducted in Dar es Salaam city in Tanzania. Road infrastructure projects under the Tanzanian National Roads Agency – TANROADS were the focus. Dar es Salaam city was selected because it is a business city with both regional and trunk road networks (TANROADS, 2016). In this study, exploratory research was used because there is limited knowledge about the failure of road infrastructure projects in Tanzania. An exploratory design is used when there are few studies or no earlier studies to protect the outcomes (University of Southern California, 2023). The study was conducted on trunk and regional roads and Tanzania National Roads Agency (TANROADS) was the case study as it is the government agency responsible for trunk and regional roads (African Development Bank, 2013; TANROADS, 2016). In this study, a population consisting of 58 project personnel who worked on 25 projects implemented in the past five years were provided by the Tanzanian National Roads Agency – TANROADS. From the finite population, a sample was determined using Krejcie and Morgan's (1970) table. Sample size estimation using Krejcie and Morgan method is widely used in research (Kharuddin, et al., 2020). In this study, 25 projects constructed in the past five years were considered and a sample of 49 respondents purposively participated in the study. The IBM SPSS Statistics was used in Data Analysis. IBM SPSS Statistics (version 25) was used as a tool for statistical analysis (Williamson, n.d.; Greasley, 2014).

4. Results and Discussion

4.1. Results

Table 8 presents the ranking of critical success factors for the implementation of road projects based on responses from 49 participants. The highest-ranked critical success factor was the appointment of a competent project manager (M = 4.27, SD = 0.811), followed by the

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allocation of sufficient resources (M = 4.18, SD = 0.993) and top and general management support (M = 4.18, SD = 0.808). These findings indicate a strong emphasis on leadership and resource management in achieving project success. The presence of an on-site project manager (M = 4.16, SD = 0.874) and client consultation (M = 4.10, SD = 0.714) were also crucial, underscoring the importance of hands-on management and stakeholder engagement.

Other top-ranked factors included project mission, goals, and philosophy (M = 4.10, SD = 0.684), client acceptance (M = 4.08, SD = 0.838), and effective communication and procedures (M = 4.06, SD = 0.827). The commitment of the project team to goals (M = 4.04, SD = 0.841) and proper scheduling (M = 4.04, SD = 0.841) also featured prominently, highlighting the need for clear objectives and efficient time management. Adequate funding to completion (M = 4.02, SD = 1.070) and cost management through accurate initial cost estimates (M = 4.00, SD = 1.080) rounded out the list of top critical success factors, indicating financial planning and control as key components of project success.

Table 1: Ranking of critical success factors for the implementation of the road projects

Overall critical success factors for road projects	**N**	**Mean**	**Standard Deviation**	**Ranking**
Appoint a competent project manager	49	4.27	0.811	1
Allocate sufficient resources	49	4.18	0.993	2
Top and general management support	49	4.18	0.808	3
On-site project manager	49	4.16	0.874	4
Client consultation	49	4.10	0.714	5
Project mission, goals, philosophy	49	4.10	0.684	6
Client acceptance	49	4.08	0.838	7
Communication and procedures	49	4.06	0.827	8
Goal commitment of the project team	49	4.04	0.841	9
Scheduling	49	4.04	0.841	10
Adequate funding to completion	49	4.02	1.070	11
Cost management (Accurate initial cost estimates)	49	4.00	1.080	12
Monitoring and feedback	49	3.98	0.901	13
Stakeholder management	49	3.98	0.854	14
Community involvement	49	3.96	0.841	15
Technical tasks (use of the right skills and technology)	49	3.96	0.912	16
Procurement (acquisition)	49	3.94	0.899	17
Operational concept	49	3.94	0.626	18
Market Intelligence (who is the client)	49	3.90	0.872	19

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Personal recruitment, selection, and training	49	3.88	0.832	20
Power and politics	49	3.80	0.866	21
Environment events	49	3.78	0.798	22
Financial contract legal problems	49	3.71	0.866	23
Minimum start-up difficulties	49	3.71	0.935	24
Absence of bureaucracy	49	3.69	0.962	25
Urgency	49	3.69	0.962	26
Project summary	49	3.61	0.812	27
Technical uncertainty innovation	49	3.51	0.938	28
Troubleshooting	49	3.49	0.869	29

Table 2: Results of one-sample t-test for critical success factors

	Test Value = 3.5				95% Confidence Interval of the Difference		
Overall critical success factors for road projects	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper	Significant (p < 0.05)
Power and politics	2.393	48	0.021	0.296	0.100	0.500	Yes
Project mission, goals, philosophy	6.157	48	0.000	0.602	0.400	0.800	Yes
Project summary	0.968	48	0.338	0.112	-0.100	0.400	No
Operational concept	4.906	48	0.000	0.439	0.300	0.600	Yes
Top and general management support	5.922	48	0.000	0.684	0.500	0.900	Yes
Absence of bureaucracy	1.411	48	0.165	0.194	-0.100	0.500	No
Scheduling	4.504	48	0.000	0.541	0.300	0.800	Yes
Market Intelligence (who is the client)	3.195	48	0.002	0.398	0.200	0.700	Yes
Client consultation	5.900	48	0.000	0.602	0.400	0.800	Yes
Community involvement	3.824	48	0.000	0.459	0.200	0.700	Yes
Stakeholder management	3.933	48	0.000	0.48	0.200	0.700	Yes
Personal recruitment, selection and training	3.175	48	0.003	0.378	0.100	0.600	Yes
Technical uncertainty innovation	0.076	48	0.94	0.010	-0.300	0.300	No
Goal commitment of project team	4.504	48	0.000	0.541	0.300	0.800	Yes
Appoint a competent project manager	6.608	48	0.000	0.765	0.500	1.000	Yes
On-site project manager	5.310	48	0.000	0.663	0.400	0.900	Yes
Allocate sufficient resources	4.819	48	0.000	0.684	0.400	1.000	Yes
Adequate funding to completion	3.404	48	0.001	0.520	0.200	0.800	Yes

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Cost management (Accurate initial cost estimates)	3.240	48	0.002	0.500	0.200	0.800	Yes
Procurement (acquisition)	3.415	48	0.001	0.439	0.200	0.700	Yes
Technical tasks (use of the right skills and technology)	3.525	48	0.001	0.459	0.200	0.700	Yes
Client acceptance	4.861	48	0.000	0.582	0.300	0.800	Yes
Financial contract legal problems	1.732	48	0.09	0.214	-0.000	0.500	No
Communication and procedures	4.751	48	0.000	0.561	0.300	0.800	Yes
Monitoring and feedback	3.725	48	0.001	0.480	0.200	0.700	Yes
Minimum start-up difficulties	1.604	48	0.115	0.214	-0.100	0.500	No
Environment events	2.418	48	0.019	0.276	0.100	0.500	Yes
Urgency	1.411	48	0.165	0.194	-0.100	0.500	No
Troubleshooting	-0.082	48	0.935	-0.010	-0.300	0.200	No

The one-sample t-test with a test value of 3.5 revealed that several critical success factors were significantly important ($p < 0.05$). From Table 9, the appointment of a competent project manager ($t(48) = 6.608$, $p < 0.001$) was the most significant factor. Allocating sufficient resources ($t(48) = 4.819$, $p < 0.001$) and top and general management support ($t(48) = 5.922$, $p < 0.001$) were also highly significant, indicating the importance of strong leadership and adequate resources. Having an on-site project manager ($t(48) = 5.310$, $p < 0.001$) and client consultation ($t(48) = 5.900$, $p < 0.001$) were essential, underscoring the need for direct management involvement and stakeholder engagement. Project mission, goals, and philosophy ($t(48) = 6.157$, $p < 0.001$) and client acceptance ($t(48) = 4.861$, $p < 0.001$) were significant, emphasizing the importance of clear objectives and stakeholder buy-in. Effective communication and procedures ($t(48) = 4.751$, $p < 0.001$) and the goal commitment of the project team ($t(48) = 4.504$, $p < 0.001$) were also critical, highlighting the need for effective communication and motivated teams. Scheduling ($t(48) = 4.504$, $p < 0.001$) and adequate funding to completion ($t(48) = 3.404$, $p = 0.001$) further highlighted the importance of time management and financial resources.

4.2. Discussion

The analysis of critical success factors for road project implementation in Tanzania reveals a strong emphasis on leadership, resource allocation, and stakeholder engagement. The appointment of a competent project manager, allocation of sufficient resources, and top and general management support are seen as essential for project success, aligning with findings from Sohu, Jhatial, Ullah, Lakhiar, and Shahzaib (2018), who emphasized the importance of competent project management. Ramlee et al. (2016) also highlighted the significance of management support and resource allocation, reinforcing these findings.

Client consultation and the establishment of a clear project mission, goals, and philosophy are critical, supporting the views of Pinto and Slevin (1988), Shenhar (1997), Prabhakar (2008), and Fernandes et al. (2022), who all noted the importance of clear project objectives and stakeholder engagement. Effective communication and procedures, along with client acceptance,

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further underscore the need for transparent and efficient communication channels, as discussed by Pinto and Slevin (1989) and Shenhar (1997).

The commitment of the project team to goals and proper scheduling are essential for maintaining project momentum and ensuring timely completion, aligning with findings by Baker, Murphy, and Fisher (1983) and Ramlee et al. (2016). Additionally, the need for adequate funding and accurate cost management highlights the importance of financial planning and control, supported by Damoah and Anthony Ayakwah (2022) and Ramlee et al. (2016).

Other factors such as stakeholder management, community involvement, and the use of appropriate technical skills and technology were also identified as significant, echoing the findings of Vogwell (2003) and Ramlee et al. (2016). These factors highlight the multifaceted nature of project success, involving technical, social, and managerial dimensions.

Power and politics were also highlighted as a critical success factor by Morris and Hough (1987), Pinto and Slevin (1989), and Damoah and Anthony Ayakwah (2022), underscoring the influence of organizational dynamics on project outcomes. The importance of minimizing bureaucracy (Baker, Murphy, & Fisher, 1983) and understanding market intelligence (Cleland & King, 1983) further emphasize the need for a streamlined and well-informed approach to project management.

Furthermore, procurement and acquisition (Cleland & King, 1983; Barajei, Appiah-Kubi, Kheni, Yalley, & Iddrisu, 2023) and addressing financial, contractual, and legal problems (Damoah & Anthony Ayakwah, 2022) are critical for ensuring smooth project execution. The significance of technical uncertainty and innovation (Morris & Hough, 1987) and the need for troubleshooting (Pinto & Slevin, 1989) highlight the importance of adaptability and problem-solving in project management.

In conclusion, Tanzani's environment is best suited for the highly ranked critical success factors, which highlight a comprehensive approach to project management that includes good communication, stakeholder participation, resource management, and strong leadership. These results are consistent with the larger body of research on project success, highlighting the significance of an all-encompassing and integrated approach to road project management.

5. Conclusion and Recommendations

This research assessed critical success factors for road projects in Tanzania. While all critical success factors got a level of agreement, the top ten (10) critical success factors highly ranked are appointing a competent project manager, allocating sufficient resources, top and general management support, on-site project manager, client consultation, project mission, goals, philosophy, client acceptance, communication and procedures, goal commitment of project team, and scheduling. These critical success factors should be considered in all road project implementation to achieve success. Project teams should ensure effective communication and procedures, proper scheduling, and commitment to the project goals. TANROADS should ensure cutting-edge knowledge to do cost estimations is being used to achieve cost efficiency. TANROADS should ensure the appointment of competent project managers and the existence of on-site project managers with the required skills. TANROADS should conduct stakeholder engagement sessions to discuss the project mission, goals, and philosophy to achieve client acceptance and overall stakeholder satisfaction. The government should ensure the allocation of sufficient resources and to do timely payment of contractors and consultants to avoid project

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delays. Both the Government and TANROADS should ensure top and general management support to all projects being implemented. The government should lessen political influence in the road project technical matters but concentrate on policies.

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