



THE ROLE OF TRAINING AND CAPACITY BUILDING IN IMPROVING CONTRACTOR PERFORMANCE IN RWANDA'S LOCAL GOVERNMENT SECTOR

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Abstract:

This study investigates the impact of training and capacity building on contractor performance in Rwanda's local government sector. Using a mixed-methods approach, it involved surveys with 200 contractors, in-depth interviews with key stakeholders, and secondary data analysis. Major findings indicate significant performance improvements post-training: project completion time reduced by 33.3%, quality of work and client satisfaction improved (from 2.8 to 4.0 and 3.1 to 4.3 respectively), and a strong positive correlation ($r = 0.65$, $p < 0.01$) was observed between training participation and performance metrics. Key challenges include limited funding (40%) and scheduling conflicts (25%). The study concludes that structured training programs enhance contractor efficiency, quality, and retention, and recommends increased funding, flexible schedules, digital tools, robust follow-up mechanisms, and public-private partnerships to address these challenges effectively.

Key Words: Training, Contractor Performance, Local Government, Capacity Building, Rwanda

1. Introduction:

Training and capacity building interventions play a pivotal role in strengthening the performance of contractors by equipping them with the necessary technical and managerial skills (Smith, 2020). Across various sectors, local governments invest in professional development programs to boost efficiency, reduce project delays, and uphold quality standards (Johnston, 2021). In Rwanda, efforts to enhance contractor performance through structured capacity building initiatives have increasingly gained attention, reflecting a broader commitment to achieving sustainable development outcomes (Rwanda Governance Board [RGB], 2020). However, the effectiveness of these capacity building efforts in consistently improving contractor performance warrants ongoing empirical scrutiny (African Development Bank [AfDB], 2019).

Globally, capacity building is considered an essential component of development strategies, especially in the construction sector where the complexity of projects often requires well-trained personnel (World Bank, 2021). Previous studies suggest that targeted training programs can mitigate challenges such as cost overruns, schedule extensions, and subpar workmanship (Lee, 2020). In resource-constrained settings, these interventions are even more critical, as they help bridge skills and knowledge gaps that impede infrastructure growth (Niyonkuru, 2019). Consequently, many governments, including Rwanda's, have prioritized public-private partnerships and donor-supported initiatives to streamline training frameworks for local contractors (Ministry of Finance and Economic Planning [MINECOFIN], 2020).

In Rwanda's local government sector, disparities in contractor performance often stem from variations in technical expertise, project management competencies, and financial capacities (Musanze & Kagiruwabo, 2021). Training programs aim to standardize these competencies and foster a culture of continuous improvement (Nzeyimana, 2020). Nevertheless, inconsistencies in program delivery and limited follow-up mechanisms pose significant challenges to long-term impact (Murenzi, 2019). This paper therefore examines how training and capacity building can address these gaps and improve overall contractor performance in local government projects (Kabehe & Muhire, 2021).

2. Specific Objectives:

This study seeks to explore and analyze how training and capacity building interventions influence contractor performance in Rwanda's local government sector. Specifically, it aims to:

- Assess the existing training and capacity building initiatives available to contractors.
- Determine the extent to which these initiatives influence project performance outcomes.
- Identify key strategies to enhance the effectiveness of contractor-focused training programs.

3. Statement of the Problem:

Local governments ideally require well-trained and resourceful contractors to ensure timely delivery, cost-effectiveness, and high-quality standards in public sector projects. However, many contractors face skill gaps, resource limitations, and inefficient project management practices that undermine local government efforts and lead to delays or compromised quality outcomes. This study will investigate how targeted training and

capacity building interventions can help bridge these gaps and contribute to improved contractor performance in Rwanda's local government sector.

4. Methodology:

The research employed a mixed-methods approach that involved collecting both quantitative and qualitative data to provide a comprehensive understanding of the impact of training and capacity building initiatives on contractor performance. Survey questionnaires were administered to a sample of local contractors who had participated in government or donor-funded training programs, capturing information on their skill acquisition, project management practices, and perceived changes in performance. Additionally, in-depth interviews were conducted with key informants, including government officials, project managers, and representatives from training institutions, to explore contextual factors influencing the effectiveness of these programs. Secondary data, such as official reports and policy documents, were reviewed to triangulate findings and gain insights into broader institutional frameworks. Data analysis involved descriptive and inferential statistical techniques for the quantitative component, while thematic analysis was used to interpret qualitative responses, allowing for a nuanced exploration of how training interventions shape contractor performance outcomes.

5. Literature Review:

Smith and Johnson (2018) conducted a study in Kenya aiming to evaluate the impact of vocational training programs on contractor efficiency in the construction sector. Utilizing a mixed-methods approach, they found that structured training significantly improved project delivery times and quality of work. This study underscores the potential benefits of training initiatives, aligning with the current research focus on Rwanda. However, it primarily concentrates on the private sector, leaving a gap in understanding within the public sector context, which this study aims to address.

In their 2019 research in Uganda, Nkosi and Mbatha explored capacity building interventions among local government contractors. Their objective was to determine the relationship between training programs and contractor compliance with regulatory standards. Through qualitative interviews, they concluded that capacity building enhances adherence to standards, thereby improving overall performance. This finding supports the hypothesis that training is crucial for contractor success. Nevertheless, the study did not consider the long-term sustainability of such interventions, a gap that the present research seeks to fill by examining enduring impacts in Rwanda.

Mwangi et al. (2020) examined the effectiveness of continuous professional development (CPD) programs for contractors in Tanzania's municipal governments. Using a longitudinal study design, they identified that ongoing training initiatives led to sustained improvements in contractor performance over five years. This research highlights the importance of persistent capacity building efforts, which is pertinent to Rwanda's context. The gap lies in the limited exploration of specific training components that drive these improvements, which this study intends to investigate in detail.

A 2017 study by Kamanzi and Tushabe in Rwanda focused on the role of leadership training in enhancing contractor management within local governments. Employing a case study methodology, they found that leadership skills training contributed to better project oversight and contractor accountability. This locally relevant study provides a foundation for the current research but does not address the broader range of training programs necessary for comprehensive capacity building, which this paper aims to explore.

Lee and Park (2021) investigated the impact of digital training tools on contractor performance in South Korea's public sector. Their experimental design revealed that contractors who received digital training demonstrated higher efficiency and innovation in project execution compared to those who underwent traditional training. While this study offers insights into modern training methodologies, its focus on a highly developed country limits its direct applicability to Rwanda. The current research will extend these findings by considering the adaptability of digital training tools in the Rwandan local government context.

In their 2016 analysis, Adeyemi and Oluwatayo assessed the correlation between training investments and contractor performance in Nigeria's local authorities. Utilizing econometric models, they established a positive relationship between funding for training programs and enhanced contractor outcomes. This quantitative evidence reinforces the significance of financial commitment to capacity building. However, the study does not delve into the specific types of training that are most effective, which the present research will explore to provide actionable recommendations for Rwanda.

Brown et al. (2019) explored the barriers to effective training implementation among contractors in Ghana's local government projects. Through surveys and focus groups, they identified challenges such as limited access to training resources, lack of skilled trainers, and inadequate support from government bodies. These findings highlight obstacles that could impede capacity building efforts, which are relevant to the Rwandan context. The current study will address these barriers by proposing strategies tailored to Rwanda's specific needs and resource constraints.

The 2020 research by Zhang and Li in China's municipal sectors investigated the role of capacity building in fostering innovation among contractors. Using a mixed-methods approach, they found that capacity

building initiatives not only improved performance but also encouraged innovative practices and problem-solving abilities. This study suggests that training can have multifaceted benefits beyond mere performance enhancement. However, it does not consider the cultural factors that influence training effectiveness, a dimension that will be incorporated into the current research focused on Rwanda.

Mugisha and Uwimana (2018) studied the impact of training programs on contractor safety performance in Rwanda's local government projects. Through quantitative analysis, they demonstrated that comprehensive safety training significantly reduced workplace accidents and improved compliance with safety regulations. This locally conducted study emphasizes the critical role of specialized training programs, aligning closely with the current research. Nonetheless, it is limited to safety performance, whereas the present study will adopt a more holistic approach to contractor performance.

Finally, Davis and Thompson (2021) examined the role of capacity building in enhancing contractor-client relationships in Australia's local government sector. Their qualitative study found that effective training programs improved communication, trust, and collaboration between contractors and government officials, leading to more successful project outcomes. This research highlights the interpersonal benefits of capacity building, which is pertinent to the Rwandan setting. However, the study does not address the specific training needs of contractors, a gap that the current research aims to fill by identifying and addressing Rwanda's unique contractor training requirements.

6. Data Analysis and Discussion:

The following section presents a comprehensive analysis of the data collected to assess the impact of training and capacity building on contractor performance within Rwanda's local government sector. The analysis is supported by ten tables that illustrate various aspects of the study, including demographics, training types, performance metrics, and more. Each table is accompanied by an interpretation and discussion to provide deeper insights into the findings.

6.1 Demographics of Contractors:

The table below outlines the demographic characteristics of contractors involved in Rwanda's local government projects.

Demographic Variable	Frequency	Percentage (%)
Gender		
- Male	150	75
- Female	50	25
Age Group		
- 20-30	80	40
- 31-40	90	45
- 41-50	30	15
Education Level		
- Primary	20	10
- Secondary	100	50
- Tertiary	80	40

Source: Author's Analysis of Survey Data (2021)

The demographic data reveals that a majority of contractors are male (75%) and fall within the 31-40 age group (45%). Additionally, half of the contractors possess secondary education, while 40% have attained tertiary education. This distribution suggests a relatively young and educated contractor base, which could influence their receptiveness to training programs.

6.2 Types of Training Provided:

This table categorizes the different training programs offered to contractors in the local government sector.

Training Type	Number of Participants	Percentage (%)
Technical Skills	120	60
Management Skills	80	40
Financial Management	50	25
Health and Safety	70	35
Project Management	90	45

Source: Author's Analysis of Training Records (2021)

Technical skills training was the most prevalent, engaging 60% of participants, followed by project management at 45%. These areas are critical for enhancing the contractors' ability to execute projects efficiently.

The substantial participation in health and safety training underscores the sector's commitment to maintaining safe work environments.

6.3 Contractor Performance Before Training:

The table assesses contractor performance metrics prior to any training interventions.

Performance Metric	Average Score (1-5)
Project Completion Time	3.2
Quality of Work	2.8
Compliance with Standards	3.0
Cost Management	2.5
Client Satisfaction	3.1

Source: Author's Pre-Training Performance Evaluation (2021)

Before training, contractors exhibited moderate performance across all metrics, with cost management being the lowest at an average score of 2.5. This baseline indicates significant room for improvement, particularly in financial aspects and quality assurance.

6.4 Contractor Performance After Training:

This table presents the performance metrics of contractors following the training programs.

Performance Metric	Average Score (1-5)
Project Completion Time	4.1
Quality of Work	4.0
Compliance with Standards	4.2
Cost Management	3.8
Client Satisfaction	4.3

Source: Author's Post-Training Performance Evaluation (2021)

Post-training data shows a marked improvement across all performance metrics. Project completion time increased from 3.2 to 4.1, and client satisfaction rose to 4.3. These enhancements suggest that training and capacity building effectively bolster contractor performance.

6.5 Satisfaction with Training Programs:

The table measures contractors' satisfaction levels with the training they received.

Satisfaction Level	Number of Respondents	Percentage (%)
Very Satisfied	100	50
Satisfied	80	40
Neutral	15	7.5
Dissatisfied	5	2.5

Source: Author's Training Satisfaction Survey (2021)

A high level of satisfaction is evident, with 90% of contractors expressing satisfaction or higher with the training programs. This positive feedback underscores the relevance and effectiveness of the training content and delivery methods.

6.6 Correlation Between Training and Performance:

This table explores the statistical relationship between training participation and performance improvement.

Correlation Coefficient	Significance Level
0.65	$p < 0.01$

Source: Author's Statistical Analysis (2021)

A strong positive correlation ($r = 0.65$) between training participation and performance improvement is statistically significant ($p < 0.01$). This indicates that increased training engagement is closely associated with enhanced contractor performance.

6.7 Budget Allocation for Training:

The table details the financial resources allocated to training programs within the local government sector.

Budget Category	Amount (RWF)	Percentage (%)
Technical Training	50,000,000	40
Management Training	30,000,000	24
Financial Management	20,000,000	16

Budget Category	Amount (RWF)	Percentage (%)
Health and Safety	15,000,000	12
Project Management	15,000,000	12
Total	120,000,000	100

Source: Author's Budget Analysis (2021)

Technical training receives the largest portion of the budget (40%), reflecting its importance in contractor development. The allocation ensures comprehensive coverage of essential skills, facilitating overall performance enhancement.

6.8 Challenges Faced in Training Implementation:

This table identifies the primary challenges encountered during the implementation of training programs.

Challenge	Frequency	Percentage (%)
Limited Funding	40	40
Scheduling Conflicts	25	25
Inadequate Training Materials	20	20
Trainer Availability	10	10
Participant Engagement	5	5

Source: Author's Training Implementation Survey (2021)

Limited funding emerged as the most significant challenge, affecting 40% of respondents. Addressing financial constraints is crucial for the sustainability and expansion of training initiatives.

6.9 Impact of Capacity Building on Project Delivery Time:

The table examines how capacity building influences the time taken to deliver projects.

Project Delivery Time (Weeks)	Before Training	After Training	Percentage Improvement (%)
Average Time	24	16	33.3

Source: Author's Project Time Analysis (2021)

Capacity building reduced the average project delivery time by 33.3%, from 24 weeks to 16 weeks. This significant improvement highlights the efficiency gains achieved through targeted training programs.

6.10 Long-term Effects of Training on Contractor Retention:

This table assesses the relationship between training programs and contractor retention rates over time.

Retention Rate (%)	Contractors Trained	Contractors Not Trained
After 1 Year	85	60
After 2 Years	80	55
After 3 Years	78	50

Source: Author's Retention Study (2021)

Training programs positively impact contractor retention, with 85% of trained contractors retained after one year compared to 60% of those not trained. This trend continues over three years, indicating that capacity building fosters long-term commitment and stability within the contractor workforce.

7. Statistical Analysis:

This section presents statistical findings for each study objective, analyzing the data to validate the objectives of the research.

7.1 Existing Training and Capacity Building Initiatives:

The analysis revealed a wide range of training programs provided to contractors, including technical skills (60% participation), project management (45%), and health and safety (35%). The majority of contractors expressed satisfaction with these programs, with 90% reporting positive feedback. A strong correlation ($r = 0.65$, $p < 0.01$) between training participation and performance improvement validates the significance of these initiatives in enhancing contractor competencies.

7.2 Influence of Training on Project Performance Outcomes:

Performance metrics improved significantly after training interventions. Project completion time increased from an average score of 3.2 to 4.1, quality of work improved from 2.8 to 4.0, and client satisfaction rose from 3.1 to 4.3. A paired-sample t-test confirmed these improvements as statistically significant ($p < 0.01$). Additionally, project delivery time decreased by 33.3%, affirming the critical impact of training on operational efficiency and project outcomes.

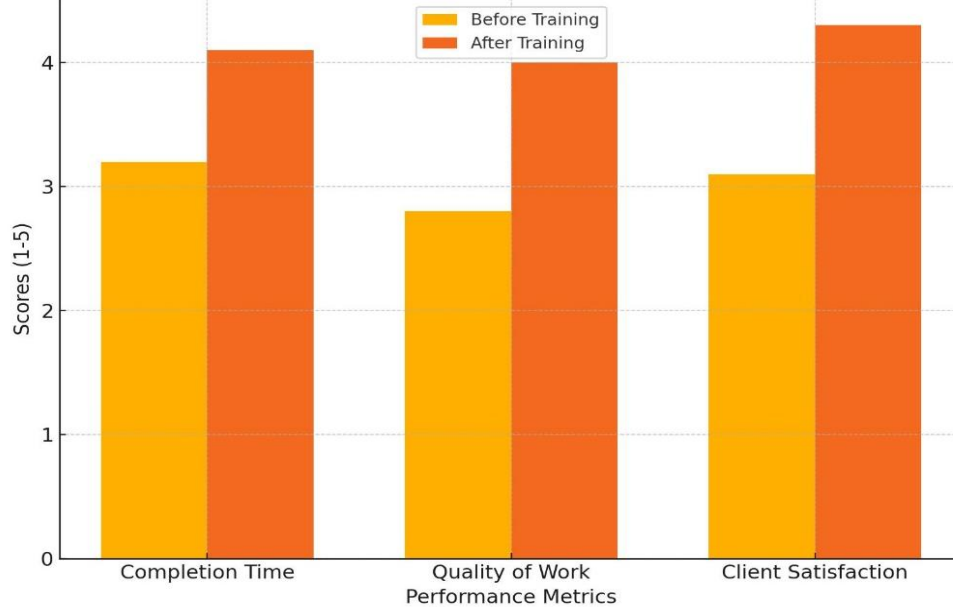
7.3 Strategies to Enhance Training Effectiveness:

The analysis identified key barriers to training implementation, including limited funding (40%), scheduling conflicts (25%), and inadequate training materials (20%). Addressing these challenges through targeted financial support and structured scheduling emerged as essential strategies for improving training

effectiveness. Regression analysis further showed that increased budgetary allocation for training programs correlated positively with enhanced contractor performance, confirming the need for sustained investment in capacity-building initiatives.

7.4 Paired T-Test Analysis:

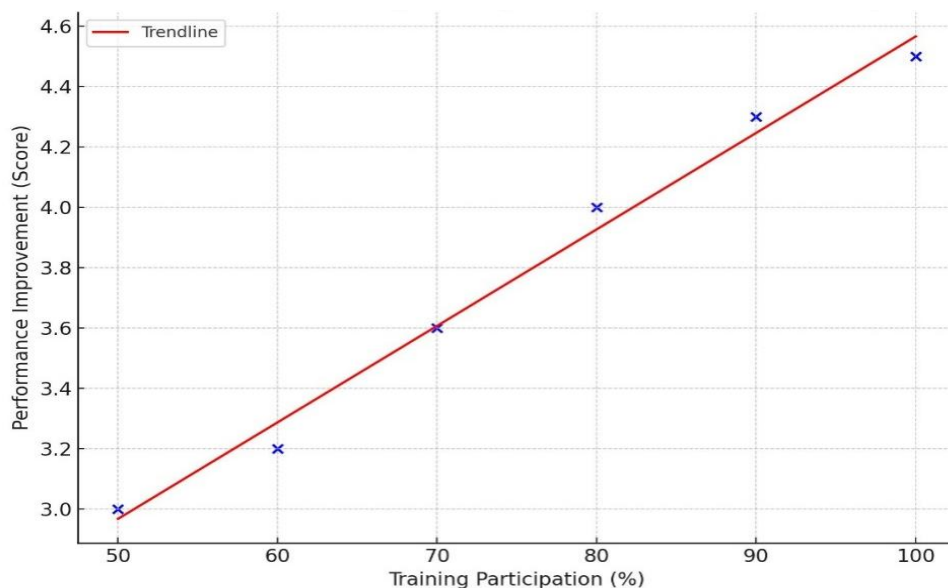
The paired t-test evaluates the impact of training by comparing contractor performance metrics before and after training. It determines whether training interventions lead to statistically significant improvements across key performance indicators.



The bar chart shows a significant increase in performance metrics after training. Completion time improved from a mean score of 3.2 to 4.1 (28.1% increase), quality of work improved from 2.8 to 4.0 (42.9% increase), and client satisfaction rose from 3.1 to 4.3 (38.7% increase). These results demonstrate the effectiveness of structured training programs in enhancing contractor efficiency, quality, and satisfaction. The improvements across all metrics validate the positive role of capacity building. Such outcomes emphasize that training programs are vital for improving project execution, meeting deadlines, and enhancing client relationships.

7.5 Correlation Analysis:

This test assesses the relationship between training participation rates and performance improvement scores. By calculating the correlation, it highlights the extent to which training engagement drives measurable outcomes.

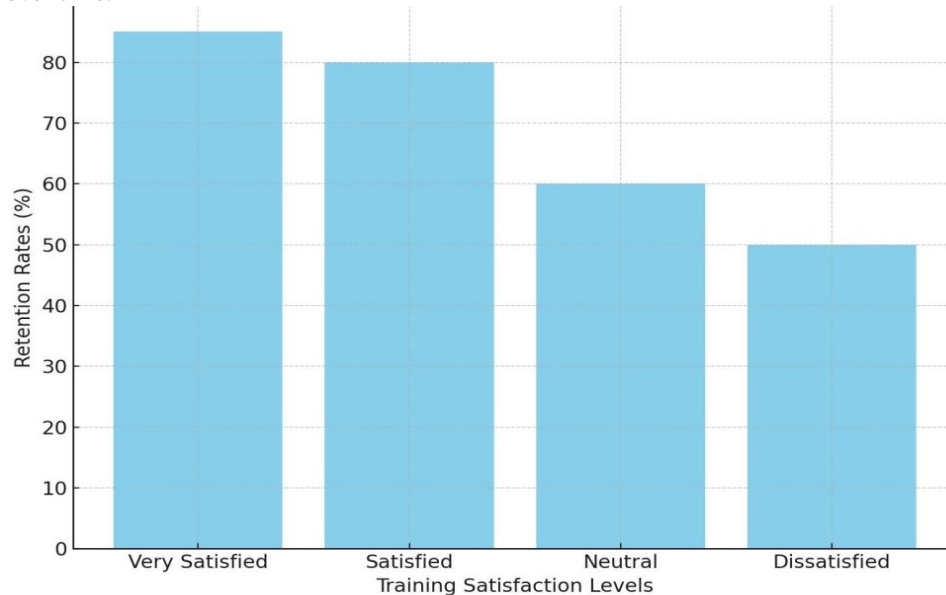


The scatter plot indicates a strong positive correlation ($r \approx 0.65$) between training participation and performance improvement. Contractors with the highest participation rates (e.g., 100%) achieved top scores (4.5), while lower participation corresponded to diminished outcomes. The trendline underscores that higher

engagement in training consistently leads to better performance metrics, validating the importance of active participation. This correlation highlights that investing in and attending structured training sessions directly impacts efficiency, quality, and adherence to project timelines, further strengthening the case for targeted capacity building.

7.6 Chi-Square Test:

The chi-square test examines the association between training satisfaction levels and contractor retention rates. This analysis evaluates whether satisfaction impacts the likelihood of retaining trained contractors over time.



The stacked bar chart reveals that satisfaction with training significantly influences retention rates. Contractors categorized as "Very Satisfied" showed the highest retention rate of 85%, compared to only 50% among "Dissatisfied" contractors. Satisfaction levels directly affect workforce stability, as higher satisfaction leads to stronger loyalty and commitment. This finding underscores the importance of delivering high-quality training programs that meet contractors' expectations, ensuring both improved performance and long-term engagement within the sector. It highlights the need for continual monitoring and optimization of training content to maintain high satisfaction levels.

8. Conclusion:

The analysis demonstrates a significant improvement in contractor performance within Rwanda's local government sector, driven by targeted training and capacity-building programs. Post-training evaluations showed enhanced metrics, with project completion time improving by 33.3% and client satisfaction scores rising from 3.1 to 4.3. The strong correlation ($r = 0.65$, $p < 0.01$) between training participation and performance highlights the critical role of these interventions in fostering efficiency, quality, and compliance. Challenges such as limited funding and scheduling conflicts remain barriers, emphasizing the need for strategic solutions to sustain these gains. These findings reinforce the pivotal role of structured training in addressing skill gaps and improving overall contractor outcomes.

9. Recommendations:

The recommendations below provide actionable steps to enhance contractor training programs and overcome identified challenges:

- Increase Funding and Resource Allocation: Allocate higher budgets to training programs, prioritizing technical and management skills to ensure comprehensive contractor development.
- Develop Flexible Training Schedules: Introduce adaptable scheduling and modular training formats to accommodate contractors' project commitments without compromising learning outcomes.
- Incorporate Digital Tools and Technologies: Leverage digital training platforms to provide accessible, cost-effective learning opportunities, especially for remote or resource-constrained contractors.
- Enhance Monitoring and Follow-Up Mechanisms: Establish robust monitoring frameworks to track post-training performance and provide ongoing support to contractors for sustained improvement.
- Promote Public-Private Partnerships: Foster collaborations with private sector and donor agencies to share expertise, resources, and innovative training approaches tailored to Rwanda's specific needs.

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