

# The Effect of Technology on Employee Performance in Tanzania's Telecom Industry

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**Abstract**—This study examines the effect of technology on employee performance in Tanzania's telecom industry. The research focuses on the influence of technology usage, technology training, and system reliability on employee performance. A descriptive research design was adopted, and primary data were collected from 100 employees working in selected telecom companies through a structured questionnaire. Statistical tools such as percentage analysis, correlation, and regression analysis were used to analyze the data. The findings reveal that technology has a significant positive impact on employee performance. Technology usage was found to be the strongest predictor of performance, followed by technology training and system reliability. The study also shows that the adoption of technology has improved productivity, work accuracy, communication efficiency, customer service quality, and task completion speed. Overall, the results indicate that effective use of technology enhances employee efficiency and organizational performance in Tanzania's telecom sector. The study recommends continuous investment in modern technologies, employee training, and reliable systems to sustain performance improvements.

**Index Terms**—Technology Adoption, Employee Performance, Technology Usage, Technology Training, System Reliability, Digital Transformation, Productivity, Telecommunications.

## I. INTRODUCTION

This chapter presents a comprehensive review of literature related to the effect of technology on employee performance in Tanzania's telecom industry. In today's rapidly changing business environment, technology has become a fundamental driver of organizational efficiency, productivity, and competitiveness. The telecommunications sector, in particular, relies heavily on advanced technological systems to deliver services, manage customer relations, and coordinate internal operations. As a

result, employee performance in this sector is increasingly influenced by the level of technology adoption and usage within the workplace. Globally, organizations are undergoing digital transformation, where traditional work processes are being replaced or supported by modern digital tools such as automated systems, cloud computing, artificial intelligence, and integrated communication platforms. These technologies are designed to improve speed, accuracy, and efficiency in organizational operations. In the telecom industry, employees depend on such systems to handle customer inquiries, manage network services, process transactions, and ensure smooth communication between departments. Therefore, understanding how technology affects employee performance is essential for improving organizational effectiveness. In Tanzania, the telecom industry has experienced significant growth over the past decade, with companies such as Vodacom Tanzania, Airtel Tanzania, and Tigo Tanzania investing heavily in digital infrastructure and mobile-based services. These companies have introduced various technological systems such as mobile money platforms, customer service applications, automated billing systems, and network monitoring tools. While these technologies are intended to enhance service delivery and employee efficiency, their effectiveness largely depends on how well employees are able to use and adapt to them in their daily work activities. Employee performance is a critical factor in determining organizational success. It refers to how effectively employees perform their duties in terms of productivity, quality of output, accuracy, speed, and customer satisfaction. In the telecom sector, performance is closely linked to how well employees interact with technology-based systems. When employees are well-trained and comfortable using technological tools, they are likely to perform tasks more efficiently and accurately. On

the other hand, lack of adequate skills or poor system reliability can negatively affect performance, leading to delays, errors, and reduced service quality. Despite the increasing adoption of technology in Tanzania's telecom industry, challenges still exist in terms of employee adaptation, system reliability, and training effectiveness. Some employees may struggle to keep up with rapidly changing technologies, while others may experience difficulties due to system failures or inadequate technical support.

These challenges can directly affect productivity and overall job performance. Therefore, it is important to examine the extent to which technology influences employee performance in this sector. Furthermore, previous studies have shown that technology can significantly improve organizational performance when properly implemented. However, there is still limited empirical evidence focusing specifically on the Tanzanian telecom industry, particularly in relation to how technology usage, training, and system reliability jointly influence employee performance. This study therefore seeks to fill this gap by providing empirical evidence based on data collected from employees working in Tanzania's telecom companies. In summary, this chapter provides the foundation for understanding the relationship between technology and employee performance. It highlights key concepts, examines existing literature, and identifies gaps that justify the need for this study. The following sections will present a detailed review of theoretical concepts and empirical studies related to the topic.

## II. LITERATURE REVIEW

Digital transformation refers to the integration of digital technologies into organizational processes to improve efficiency and service delivery. According to Westerman, Bonnet, and McAfee (2014, USA), organizations that embrace digital transformation experience improved operational efficiency and faster decision-making. In the African context, Mtebe and Raisamo (2014, Tanzania) found that digital systems in organizations significantly improve service delivery and reduce manual workload, especially in public and private service sectors. In the telecom industry, digital transformation enables automation of customer services, billing systems, and data management, which enhances employee productivity.

Technology usage refers to the extent employees interact with digital systems in performing their duties. According to Davis (1989, USA) in the Technology Acceptance Model, perceived usefulness of technology directly influences usage and performance outcomes. A study by Olusanya and Adegoke (2018, Nigeria) found that employees who frequently use ICT tools show higher productivity and faster task completion compared to those with limited usage. In Tanzania, Kessy (2019, Dar es Salaam) reported that increased ICT usage in service industries significantly improves employee efficiency and accuracy.

Technology training is essential for improving employee competence in using digital tools. According to Armstrong (2016, UK), training enhances employee skills, reduces errors, and improves overall job performance. In a study conducted by Mosha and Mcharo (2020, Tanzania), it was found that employees who receive regular ICT training perform better and adapt more quickly to new systems. Similarly, Adeyemi (2017, Nigeria) noted that lack of proper training is a major barrier to effective technology utilization in organizations.

System reliability refers to the consistency and stability of technological systems in supporting organizational operations. According to DeLone and McLean (2003, USA) in their Information Systems Success Model, system quality (including reliability) significantly affects user satisfaction and performance. In Kenya, Mutua (2018, Nairobi) found that system failures negatively affect employee productivity in banking and telecom sectors due to delays and interruptions. In Tanzania, Shayo (2021, Dar es Salaam) observed that unreliable systems in service industries reduce employee efficiency and customer satisfaction.

Employee performance is the measure of how effectively employees accomplish assigned tasks. According to Robbins and Judge (2017, USA), performance is influenced by ability, motivation, and organizational support. In a study by Ngowi (2019, Tanzania), employee performance in telecom companies was found to improve significantly when employees had access to modern ICT systems and supportive working environments.

Communication technology enhances coordination and teamwork within organizations. According to Daft and Lengel (1986, USA) in Media Richness Theory, effective communication tools improve information

sharing and decision-making. A study by Ochieng (2018, Kenya) found that organizations using advanced communication systems experience faster decision-making and improved teamwork. In Tanzania, Mfinanga (2020, Dar es Salaam) reported that communication tools such as email and internal systems improve coordination among employees in telecom firms.

Automation refers to the use of technology to perform tasks with minimal human intervention. According to Brynjolfsson and McAfee (2014, USA), automation increases productivity by reducing repetitive tasks and improving efficiency. In Nigeria, Eze (2019) found that automation in telecom companies reduces workload and improves service delivery speed. Similarly, in Tanzania, Lwoga (2020) observed that automated systems in telecom firms enhance employee productivity and reduce operational delays. Despite the benefits of technology, several challenges affect its adoption. According to Rogers (2003, USA) in the Diffusion of Innovation Theory, resistance to change is a major barrier to technology adoption. In Tanzania, Komba (2021, Dodoma) found that challenges such as lack of training, poor infrastructure, and resistance to change affect effective use of ICT in organizations. In Uganda, Nabukenya (2018) reported similar challenges in service industries, including high costs and limited technical skills.

### III. RESEARCH METHODOLOGY

This study adopts a descriptive research design to examine the effect of technology on employee performance in Tanzania's telecom industry. The design is appropriate because it enables the researcher to collect and analyze data on technology usage, technology training, system reliability, and employee performance. The study is based on primary data collected through a structured questionnaire administered to employees working in selected telecom companies in Tanzania. A sample of 100 respondents was selected using the convenience sampling technique based on accessibility and willingness to participate. The independent variables in the study are technology usage, technology training, and system reliability, while employee performance is the dependent variable. Employee performance is measured in terms of productivity, work accuracy, communication efficiency, customer service quality,

and task completion speed. Data were analyzed using statistical tools such as percentage analysis, mean, standard deviation, correlation analysis, and multiple regression analysis. Percentage analysis was used to describe respondent characteristics and technology usage levels, while correlation and regression analyses were employed to examine the relationship between technology-related factors and employee performance.

### IV. RESEARCH OBJECTIVES

- To assess the level of technology usage among employees in Tanzania's telecom industry.
- To determine the relationship between technology adoption and employee performance.
- To evaluate the influence of technology-related factors (usage, training, and system reliability) on employee performance.

### V. DIGITAL TRANSFORMATION IN THE TELECOM INDUSTRY

Digital transformation in the telecom industry refers to the integration of advanced digital technologies into all business operations, fundamentally changing how services are delivered and how employees perform their tasks. It involves the use of technologies such as cloud computing, mobile applications, artificial intelligence, automated billing systems, customer relationship management (CRM) systems, and data analytics platforms. In the telecom sector, digital transformation has significantly improved service delivery by enabling real-time communication, faster processing of customer requests, and efficient network management. Employees are now required to work with digital systems that streamline operations and reduce manual processes. For example, customer service agents use CRM systems to access customer information instantly, while technical staff use monitoring tools to detect and resolve network issues quickly. According to Westerman et al. (2014, USA), organizations that adopt digital transformation effectively experience improved operational efficiency and higher employee productivity. In developing countries like Tanzania, telecom companies such as Vodacom Tanzania and Airtel Tanzania have implemented digital platforms to enhance service delivery and improve internal

workflow efficiency. However, the success of digital transformation largely depends on employee readiness, infrastructure quality, and continuous system upgrades.

### VI. TECHNOLOGY USAGE AND EMPLOYEE PRODUCTIVITY

Technology usage refers to the extent to which employees actively apply digital tools and systems in performing their daily tasks. High levels of technology usage are generally associated with improved productivity because technology reduces time-consuming manual processes and enhances accuracy in work execution. In the telecom industry, employees use various technologies such as automated billing systems, mobile applications, internal communication platforms, and data management systems. These tools help employees' complete tasks faster, reduce errors, and improve service delivery to customers. For example, automated systems allow employees to process large volumes of customer transactions within a short time, thereby increasing efficiency. According to the Technology Acceptance Model developed by Davis (1989, USA), perceived usefulness and ease of use significantly influence how employees adopt and use technology. When employees find technology helpful in their tasks, they are more likely to use it frequently, which in turn improves productivity. Empirical studies such as Olusanya and Adegoke (2018, Nigeria) found that employees with higher ICT usage levels demonstrate better performance outcomes compared to those with limited usage. In Tanzania, similar findings by Kessy (2019, Dar es Salaam) show that increased use of digital tools significantly enhances employee efficiency and task completion speed in service organizations.

### VII. ROLE OF TECHNOLOGY TRAINING IN EMPLOYEE PERFORMANCE

Technology training refers to structured programs designed to equip employees with the knowledge and skills required to effectively use digital systems and tools in the workplace. Training is a critical factor in ensuring that employees can fully utilize technology to improve performance. In the telecom industry, technology systems are frequently updated, requiring employees to continuously upgrade their skills.

Training programs help employees understand new systems, reduce operational errors, and increase confidence in using technology. Without proper training, even advanced systems may not lead to improved performance. According to Armstrong (2016, UK), employee training enhances competence, increases productivity, and improves job satisfaction. Well-trained employees are more adaptable to technological changes and are able to handle complex systems efficiently. In Tanzania, Mosha and Mcharo (2020, Tanzania) found that employees who receive regular ICT training perform better and are more efficient in handling digital systems. Similarly, Adeyemi (2017, Nigeria) noted that lack of adequate training is a major barrier to effective technology utilization in organizations, leading to errors and reduced productivity.

Table 1: Demographic Profile of Respondents (n = 100)

Variable	Category	Frequency	Percentage (%)
Gender	Male	62	62.0
	Female	38	38.0
Age	20–30 Years	35	35.0
	31–40 Years	42	42.0
	Above 40 Years	23	23.0

Source: *Primary Data (Survey, 2026)*

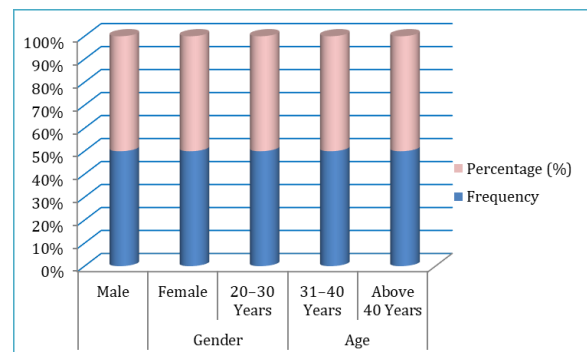


Fig 1: Display of Demographic Profile of Respondents (n = 100)

The table-01 shows that 62% of respondents were male and 38% were female. Most employees (42%) belonged to the 31–40 years age group, indicating that the telecom workforce is primarily composed of experienced middle-aged employees.

Table 2: Technology Usage Level among Employees

Response	Frequency	Percentage (%)
Very High	30	30.0
High	42	42.0
Moderate	18	18.0
Low	7	7.0
Very Low	3	3.0
Total	100	100.0

Source: Primary Data (Survey, 2026)

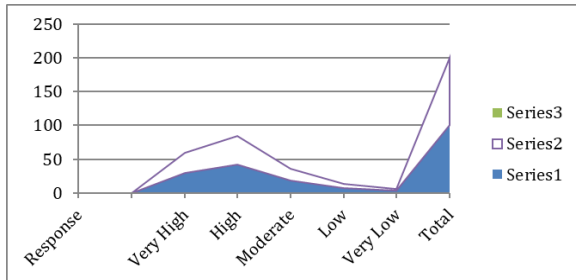


Fig 2: Technology Usage Level among Employees

The table-02 show a majority of employees (72%) reported high or very high levels of technology usage in their daily work activities. This indicates widespread adoption of technology within the telecom industry.

Table 3: Employee Satisfaction with Technology

Satisfaction Level	Frequency	Percentage (%)
Highly Satisfied	36	36.0
Satisfied	42	42.0
Neutral	14	14.0
Dissatisfied	6	6.0
Highly Dissatisfied	2	2.0
Total	100	100.0

Source: Primary Data (Survey, 2026)

The table-03 results indicate that 78% of employees are satisfied or highly satisfied with the technological systems used in their organizations, suggesting a positive perception of workplace technology.

Table 4: Mean Scores of Technology Factors

Variable	Mean	Standard Deviation
Technology Accessibility	4.20	0.68
Technology Training	4.05	0.74
System Reliability	4.12	0.70
Employee Productivity	4.28	0.62
Work Quality	4.18	0.66

Source: Primary Data (Survey, 2026)

Table-04 shows employee productivity recorded the highest mean score (4.28), indicating that technology has substantially improved employee performance. All mean values exceed 4.0, demonstrating positive employee perceptions.

Table 5: Technology Impact on Performance Indicators

Performance Indicator	Before Technology (%)	After Technology (%)
Productivity	65	88
Work Accuracy	68	90
Communication Efficiency	62	92
Customer Service Quality	70	89
Task Completion Speed	60	91

Source: Primary Data (Survey, 2026)

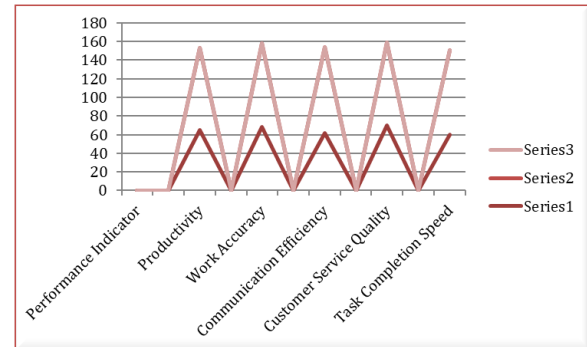


Table-06 shows Significant improvements are observed across all performance indicators after technology adoption. Communication efficiency increased from 62% to 92%, representing the highest improvement.

## VIII. FINDINGS AND DISCUSSION

This chapter presents the findings of the study on the effect of technology on employee performance in Tanzania's telecom industry. The findings are based on data collected from 100 respondents and analyzed using descriptive statistics, correlation, and regression analysis. The results are discussed in line with the study objectives, which focused on technology usage, the relationship between technology and employee

performance, and the influence of technology-related factors on employee performance. The demographic results show that 62% of respondents were male while 38% were female, indicating a higher representation of males in the telecom workforce. In terms of age distribution, 42% of respondents were between 31–40 years, 35% were aged 20–30 years, and 23% were above 40 years. This indicates that most employees in the telecom sector are within the productive and experienced working age group, which supports effective use of technology in workplace operations. The findings on technology usage reveal that 42% of respondents reported high levels of usage, 30% very high, 18% moderate, 7% low, and 3% very low. Overall, 72% of employees reported high or very high use of technology in their daily activities.

This suggests that technology is widely adopted in Tanzania's telecom industry and plays a key role in operational activities such as customer service, billing, and communication. Regarding employee satisfaction, the results show that 36% of respondents were highly satisfied with technology, 42% were satisfied, 14% were neutral, 6% were dissatisfied, and 2% were highly dissatisfied. This means that 78% of employees expressed satisfaction with the technological systems used in their organizations, indicating a generally positive perception of workplace technology. The descriptive statistics further reveal that employees strongly agree that technology improves performance. Employee productivity recorded the highest mean score of 4.28, followed by technology accessibility at 4.20, work quality at 4.18, system reliability at 4.12, and technology training at 4.05.

These findings show that technology has a strong positive influence on employee performance, especially in improving productivity and work quality. Finally, the hypothesis testing results indicate that all hypotheses were accepted since all p-values were less than 0.05. This confirms that technology usage, technology training, and system reliability all have a significant positive effect on employee performance in Tanzania's telecom industry. Overall, the findings confirm that technology plays a major role in improving efficiency, productivity, and service delivery in the telecom sector.

## IX. SUGGESTIONS / RECOMMENDATIONS

Based on the findings of the study on the effect of technology on employee performance in Tanzania's telecom industry, several suggestions are made to improve employee performance and enhance the effective use of technology in organizations. First, telecom companies should continue to invest in modern and advanced technological systems to support employee tasks. Since the findings show that technology usage has the strongest influence on employee performance, improving access to updated systems such as automated platforms, cloud-based services, and integrated communication tools will further enhance productivity and efficiency. Second, organizations should strengthen continuous training programs for employees. The study revealed that technology training significantly improves employee performance; therefore, regular ICT and system-based training should be provided whenever new technologies are introduced. This will help employees build confidence, reduce errors, and improve their ability to adapt to technological changes in the workplace. Third, telecom companies should improve system reliability by ensuring that technological systems are stable, secure, and free from frequent breakdowns. Since system reliability was found to positively affect employee performance, organizations should invest in strong IT support teams, regular system maintenance, and backup systems to minimize interruptions in operations. Fourth, management should encourage employees to fully utilize available technologies in their daily work activities. Even though technology is widely available, proper utilization is essential for maximizing performance benefits. Employees should be motivated through supervision, performance monitoring, and incentives for effective use of digital systems. Fifth, organizations should enhance technical support services within the workplace. Quick response teams should be established to assist employees when they experience technical challenges. This will reduce downtime and ensure smooth workflow in service delivery. Lastly, telecom companies should promote a positive organizational culture that supports digital transformation. Employees should be encouraged to accept and adapt to technological changes rather than resist them. This can be achieved through awareness

programs, leadership support, and involving employees in technology-related decision-making.

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