

**QUALITY RESOURCES AND STANDARD EQUIPMENT OF LISTED TABLE WATER
PRODUCING COMPANIES IN RIVERS STATE**

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ABSTRACT

The research examined quality resources and standard equipment of listed table water producing companies in Rivers State. Cross sectional survey design was used for the study. The accessible population derived was 9 listed public agencies which give total respondents of 176 through the census and purposive technique. However instrument used for data collection was a structured questionnaire after validated by the supervisors, and the instrument was reliable through the test of Cronbach alpha at 0.70. Univariate and bivariate analysis were carried out using the Spearman Rank Order Correlation coefficient at a 0.05 level of significance. The data retrieved was analyzed. Result shown that quality resources have a positive significant correlation with standard equipment. Therefore, the study concluded that quality resources enhance standard equipment). Thus, the researcher recommended that Management of the table water producing companies should establish clear production plans that integrate quality standards at every stage, from sourcing raw materials to final finishing, minimizing waste and maximizing profitability.

Keywords: Quality Resource, Standard Equipment, Quality Control

INTRODUCTION

Quality planning is a systematic process where an organization identifies the standards and specifications required to achieve consistent and reliable output. By carefully defining processes, resource needs, and performance expectations, quality planning helps an organization ensure that its production and service activities run smoothly and efficiently. This contributes to organizational profitability by reducing waste, preventing production errors, and minimizing the cost of rework or product failure. When quality is built into processes from the beginning, the organization is better able to control costs and improve its financial performance. In addition, quality planning enhances the productivity level of the organization by ensuring that tasks are clearly outlined, resources are properly allocated, and employees understand their roles in meeting organizational objectives. Clear planning also guides the selection and use of standard equipment, ensuring that machinery and tools are suitable, well-maintained, and capable of producing consistent results. When quality planning is effectively implemented, the organization experiences improved workflow, reduced downtime, and a more efficient use of resources—all of which support sustainable productivity and profitability. With this foundation established, the focus shifts to quality improvement, which ensures continuous progress.

Quality improvement is concerned with continuously enhancing processes, products, and services to achieve better performance and customer satisfaction. For organizational profitability, quality improvement helps reduce operational costs by identifying inefficiencies, eliminating waste, and preventing repeated mistakes. When organizations consistently review and refine their processes, they are more likely to deliver high-quality output that satisfies

customers, encourages repeat business, and strengthens market competitiveness. Quality improvement also supports increased productivity levels by promoting ongoing evaluation and upgrading of work methods, employee skills, and workflow systems. This ensures that operations remain up-to-date and capable of meeting modern production demands. Furthermore, quality improvement influences the effective use of standard equipment, as it encourages regular inspection, timely repairs, and technological upgrades when necessary. By promoting better use and maintenance of equipment, organizations avoid unnecessary breakdowns and production delays. With continuous improvement, work becomes more efficient and reliable, contributing to both productivity and profitability. The next factor that sustains these benefits is the use of quality resources.

Quality resources refer to the skilled workforce, adequate funding, reliable materials, and appropriate technology that support organizational operations. These resources directly influence organizational profitability, as the use of qualified personnel and high-quality materials leads to better product performance and fewer defects. When organizations invest in quality resources, they are more likely to produce outputs that meet customer expectations, retain market share, and achieve long-term financial growth. Quality resources also play a vital role in enhancing productivity levels. Employees who have access to training, supportive work environments, and reliable tools tend to perform their tasks more efficiently and with greater accuracy. This also extends to the use of standard equipment, where quality resources ensure that tools and machines are properly selected, regularly maintained, and upgraded as needed. By supporting operations with high-quality inputs, the organization reduces downtime, improves workflow consistency, and strengthens overall performance. Therefore, quality resources form the foundation that enables quality planning and improvement to function effectively, ultimately promoting profitability, productivity, and operational stability. Nwosu (2024) asserts that table water companies that adopt systematic quality improvement initiatives experience fewer product defects and higher customer satisfaction. These quality control practices collectively enhance the reliability and competitiveness of Nigerian table water companies.

Research Hypothesis

H₀₁: There is no significant relationship between empathy and profitability of table water producing companies in Rivers State.

Quality Resources

Mbon (2019) defined quality resources as educational materials and tools that effectively support instructional delivery and enhance learning outcomes in Nigerian universities. Sampson (2024) described quality resources as those that meet established minimum standards necessary for effective primary healthcare service delivery across Nigeria. Ogah (2024) observed that quality resources in healthcare include well-equipped facilities, adequately trained personnel, and essential medical supplies that ensure high-quality primary health care. Opeyemi (2024) emphasized quality resources as reliable and accurate medical laboratory services that are crucial for enhancing healthcare quality.

Obialor (2024) noted that quality resources involve maintaining and meeting standards across various sectors to ensure effective governance and service delivery. Ibidunni (2023) defined quality resources as institutional assets, including human, material, and technological inputs, that drive research productivity and academic excellence. Garba (2020) described quality resources as investments in biomedical research infrastructure and human capital that promote sustainable economic growth and innovation. Endalamaw (2024) highlighted quality resources

as data, tools, and human expertise that support continuous improvement and evidence-based decision-making in healthcare.

Medase (2023) viewed quality resources as natural and institutional assets that, when well-managed, foster entrepreneurial activities and sustainable development. Mbon (2019) also emphasized that quality resources are those that align with instructional goals and are regularly evaluated to ensure relevance and effectiveness in education. J Martin (2020) opined that quality resources encompass materials and processes that consistently meet evolving standards of excellence and fitness for purpose in quality management. Busse (2019) observed that quality resources in healthcare are those that improve health system performance by ensuring safety, effectiveness, and patient-centeredness.

Harvey (2024) defined quality resources as those that deliver value for money, consistency, and transformative impact across educational and organizational contexts. Heiser (2022) described quality resources as indicators and frameworks that measure and ensure educational quality beyond borders, emphasizing international standards. Bashan (2021) highlighted quality resources as integrated systems and skills that support global organizational effectiveness through systems thinking. WHO (2020) stated that quality resources in health services are those that increase the likelihood of desired health outcomes by being safe, effective, timely, and equitable.

ASQ (2023) defined quality resources as tools, terms, and methodologies that help organizations meet and exceed customer requirements and expectations. UNESCO (2021) described quality resources as open educational materials that are accessible, adaptable, and support inclusive learning worldwide. Martin (2025) emphasized that quality resources reflect the dynamic meanings of quality, adapting to changing contexts and stakeholder needs. Quality Assurance Magazine (2022) noted that quality resources are those that meet requirements and exceed customer expectations through continuous improvement and innovation.

Skilled Personnel: Skilled personnel encompass employees who possess specialized knowledge, technical proficiency, and professional qualifications relevant to their roles. These competencies are acquired through formal education, vocational training, and practical experience. According to Wright and McMahan (1992), human capital—embodied in skilled workers—constitutes a valuable, rare, and difficult-to-imitate resource that can provide sustained competitive advantage.

Standard Equipment

Organizational standard equipment is the set of physical assets whose acquisition, operation, maintenance and disposal are managed across their lifecycle to deliver consistent organisational value (Ernesto, 2019). Organizational standard equipment means the baseline inventory of machines and systems whose management capability (strategy, people, IT, processes) must be mature enough to drive the organisation's operational performance (Shuihua Han et al., 2020). Organizational standard equipment refers to equipment that is subject to evidence-based maintenance (scheduled, corrective and KPI-driven) so it remains functional, safe and available when needed (Iadanza et al. (2019).

Organizational standard equipment is any asset identified in an organisation's asset/strategic-asset management framework whose performance, risks and costs are actively balanced to meet organisational objectives (ISO/asset-management view). — *Institute of Asset Management / ISO guidance* (ISO-TS, 2019). Organizational standard equipment comprises the items that firms treat as "essential" for service readiness and reliability; their availability and functional state determine the organisation's ability to deliver core services (Zamzam et al.

2021). Organizational standard equipment denotes equipment managed under sustainable, service-oriented maintenance policies (including optimized scheduling and resource constraints) so total life-cycle costs and downtime are minimized (Qin, 2022).

Organizational standard equipment is the set of machines and tools whose selection, allocation and supervision on projects are governed by management policies to ensure time, cost and quality objectives are met (Ranjithapriya & Arulselvan, 2020). Organizational standard equipment is the defined package of medical devices and monitors included in a facility's service package, managed (procured, calibrated, maintained) to meet clinical protocols and patient-safety standards (Lin et al. 2020). Organizational standard equipment is the set of monitored assets whose real-time data (telemetry, condition monitoring) are integrated into management systems to support decisions on utilization, predictive maintenance and operational optimization (Nakanishi et al, 2022). Organizational standard equipment describes assets governed by formal policies (inventory control, KPI reporting, budgeting) so that asset decisions consistently contribute measurable value to organisational goals. Organizational standard equipment is the set of necessary machines, tools and physical facilities that must be installed in an operational unit (e.g., an abattoir) so the unit can produce safe, lawful outputs and protect public health (Chidubem S. Obidegwu et al., 2019).

Organizational standard equipment means functional, fit-for-purpose medical and support devices that meet minimum package specifications required to deliver primary health services (Sampson et al., 2024). Organizational standard equipment refers to the quality-compliant instruments and materials whose availability and maintenance determine staff ability to deliver proper care and the organisation's service readiness (Olorunfemi et al., 2023). Organizational standard equipment is the collection of diagnostic tools, rapid tests and related consumables that comprise the 'gold-standard' capacity a frontline facility needs to correctly identify and manage cases (Ayandipo et al., 2023) Organizational standard equipment denotes the baseline set of safety, hygiene and processing machines that conform to statutory or sectoral norms, enabling lawful operation and reducing public-health risk (Obidegwu et al., 2019).

Organizational standard equipment is the hardware and calibrated devices included in national or facility minimum service packages that, together with staffing and medicines, define a facility's ability to deliver universal, quality services (Ogah, 2024). Organizational standard equipment describes tools and machines whose specification, conformity and maintenance are part of product/quality-standardisation efforts in industry i.e., equipment that supports consistent product quality and regulatory compliance (Ifeanyi et al., 2022). Organizational standard equipment is the set of ergonomically appropriate, human-centred tools and workplace devices whose presence and design reduce worker risk and align with human-factors practice (Nwanya , 2023). Organizational standard equipment means infection-prevention and control tools (PPE, sterilisation and environmental controls) that meet IPC guidance so staff and patients are protected during routine and outbreak care (Ochie et al., 2022)

Organizational standard equipment denotes the essential, costed list of devices and infrastructure included in normative service-delivery costing exercises equipment that is required (and budgeted for) if an organisation is to meet its defined service package (Ogundeji et al., 2023).

Modern Tools: Contemporary industrial operations increasingly rely on sophisticated technologies to maintain equipment standards. Modern platforms provide real-time GPS tracking, maintenance management, and detailed analytics to enhance fleet efficiency and reduce operational costs. The regulatory landscape has experienced a 68% increase in machinery regulations since 2017, reaching 20,805 regulations by 2024, demonstrating the

growing complexity and importance of compliance tools. The ANSI B11 Machine Tools Safety series contains comprehensive safety requirements addressing proper design, construction, set-up, operation, and maintenance, along with risk assessment. Modern tools also emphasize interoperability and efficiency, with industrial automation standards promoting compatibility between vendors and devices, contributing to reliability across operations. Advanced maintenance software, particularly Computerized Maintenance Management Systems (CMMS), has revolutionized equipment oversight by automating scheduling and streamlining workflows. Today's industrial equipment represents intricate systems where hardware meets software, embedded within customer ecosystems and spanning from edge to cloud connectivity.

Regular Maintenance: Systematic maintenance programs are essential for equipment longevity and operational efficiency. Approximately 53% of organizations dedicate around 30 hours per week to maintenance activities, highlighting its critical role in operations. Recent developments have elevated maintenance standards to mandatory compliance levels. NFPA 70B transitioned from a recommended practice to an enforceable standard in January 2023, requiring development of safety programs addressing maintenance, inspections, servicing, and testing of electrical equipment. The SAE JA1011 and JA1012 standards establish best practices for Reliability-Centered Maintenance (RCM) processes, enabling organizations to identify necessary maintenance, prioritize tasks, and execute them effectively. These frameworks help organizations achieve higher asset performance and significant cost savings.

Industry-wide standards such as ISO 55000 provide comprehensive guidance for asset lifecycle management, while internal standards are tailored to specific organizational needs. Maintenance standards contribute to increased equipment reliability, reduced downtime, streamlined processes, improved safety conditions, and stronger regulatory compliance. Regular inspections and documentation through maintenance management systems ensure organizations meet safety requirements and avoid operational disruptions that cost manufacturers billions annually in lost production time.

Empirical review

Adewale (2020) studied the effect of quality control practices on organizational effectiveness in manufacturing firms in Lagos State. The objective was to determine how inspection, testing and process monitoring contribute to firms' performance. The researcher adopted a descriptive survey research design. The population of the study consisted of 250 employees of three selected manufacturing firms. A sample size of 150 respondents was selected using simple random sampling technique. Data were analyzed using the Statistical Package for Social Sciences (SPSS) and Pearson Product Moment Correlation. The findings revealed that regular quality control checks significantly improved product consistency and reduced production defects. The study concluded that quality control has a positive impact on organizational effectiveness. The researcher recommended continuous staff training and strict adherence to quality standards.

Okonkwo (2021) examined the relationship between quality assurance practices and organizational effectiveness in the pharmaceutical industry in Anambra State. The objective of the study was to determine the role of quality inspection and compliance certification on operational outcomes. A survey research design was utilized. The population comprised 320 workers across four pharmaceutical firms. Using stratified sampling, a sample size of 180 was selected. Data analysis was conducted using regression analysis. Findings showed that firms with strong quality assurance systems recorded higher customer satisfaction and fewer product

recalls. The study concluded that quality assurance is essential for organizational growth. It recommended investment in advanced laboratory testing equipment.

Nyaga and Gakobo (2017). Total Quality Management (TQM) practices operate as a reciprocated system that integrates with other organizational assets to engender competitive advantage. Many Savings and Credit Cooperatives (SACCOs) today have reached at the culmination that effective quality management can augment their competitive abilities and provide strategic leverages in the market place. There seem scarce researches have been conducted addressing Quality Management (QM) practices and their effect on organizational performance of SACCOs. The study examined the Quality Management (QM) practices and their effect on Organizational performance of SA COs in Kirinyaga County, Kenya. The study employed descriptive research design and targeted a total of six (6) registered deposit taking SACCOs operating in Kirinyaga County, Kenya with a population of four hundred and eighteen (418) respondents. The target population comprised of employees of the SACCOs. The sample size of one hundred and twenty six (126) subjects was drawn using stratified random sampling. The research instrument for this study was a self-administered structured questionnaire that was developed by the researcher. The reliability of the items was determined by utilization of Cronbach's coefficient alpha The data was evaluated with the aid of the Statistical Packages for Social Sciences (SPSS) software. Multiple regression analysis was used to determine the effects of the elements of total quality management on organizational performance. The findings were presented using comparative tables showing percentages, frequencies and charts. The study findings of correlation analysis disclosed that top management commitment and support, employees' involvement through training and customer focus positively and significantly affected organizational performance. The findings of this research indicate that quality management practices have a high positive effect on organizational performance thus any SACCO managers aiming to achieve enhanced organizational performance should consider implementation of the elements of quality management practices. This study advocates that future studies appraise the effect of the other facets of quality management practices that were not part of the current study, on organizational performance.

Research Design

Cross sectional survey research design was adopted in this study because it constitutes the blueprint for the measurement and analysis of data (Ernest et al. 2015). The purpose of cross sectional survey design will enable the researcher to collect details and factual information that describes an existing phenomenon. This design deals with incidences of distribution and relationships among variables; it will deemed the best strategy to fulfill the objectives of this study.

Population of the Study

The population of the study was 44 table water producing companies in Rivers State.

Sample and Sampling Technique

Cooper and Schindler (2003) stated that the size of a sample should be a function of the variation in the population parameter under study and the estimated precision by the researcher. Therefore Census technique and purposive sampling technique was employed in getting the sample based on the studied quality control practices and organizational effectiveness of table water producing companies in Rivers State. Hence 176 respondents via 1 Manager, 1 Head of quality control, 1 Head of quality assurance and 1 Head of Human Resource respectively.

Sources of Data

This study employed primary and secondary data. The primary source of data was on a first-hand basis. This study made use of questionnaire to generate the primary data. Prior to the distribution of the questionnaire, secondary data was used for data collection from relevant literature including journals, books, research papers, conference papers, government reports, and relevant electronic data, which informed the empirical study.

Instruments for Data Collection

The instrument that was employed for data collection was questionnaire construction by the researcher.

Reliability of the Instrument

To establish the reliability of the research instrument, a pilot test was conducted using 30 respondents selected from the study population but outside the main sample to avoid contamination of data. The internal consistency of the instrument was assessed using Cronbach's Alpha, which measures how closely related the items in each construct are. According to the reliability rule, a Cronbach's Alpha value of 0.70 and above indicates that the instrument is reliable for data collection. The result of the reliability test revealed that all variables in the study recorded values above the acceptable threshold, indicating that the items used to measure the constructs were consistent and dependable for the study.

Method of Data Analysis

The data collected from the administered questionnaires were sorted, coded, and analyzed using both descriptive and inferential statistical methods. The Statistical Package for Social Sciences (SPSS) was employed for computation and accuracy. The method of analysis was guided by the research questions and hypotheses of the study. The analysis consisted of four levels, namely: analysis of demographic variables, univariate analysis, bivariate analysis, and multivariate analysis. Data from questionnaire was coded and entered into the computer using Statistical Package for Social Sciences (SPSS Version 23) for analysis. The study employed simple percentage and Spearman rank order correlation coefficient to determine the relationship of each independent variable on the dependent variable.

Hypothesis one.

H₀₁: There is no significant relationship between quality resources and standard equipment

This section intends to measure the correlation between quality resources and *standard equipment*

Table 1: Analysis of the effect of quality resources on *standard equipment*

Correlations				
			<i>Quality resources</i>	<i>Standard equipment</i>
Spearman's rho	<i>Quality resources</i>	Correlation	1.000	.769**
		Coefficient		
		Sig. (2-tailed)	.	.000
	<i>Standard equipment</i>	N	170	170
		Correlation	.769**	1.000
		Coefficient		
		Sig. (2-tailed)	.000	.
		N	170	170

** . Correlation is significant at the 0.01 level (2-tailed).

Table 1 reveals that the Spearman Correlation coefficient is 0.769 which reflect a strong positive linear relationship between quality resources and standard equipment. And the Correlation test is highly significance at ($p < 0.001$). Positive relationship means that as quality resources increases standard equipment also increases. Hence, the study concludes that there is a significant relationship between quality resources and standard equipment. Therefore null hypothesis was rejected.

CONCLUSION

conclusively, the provision of quality resources—ranging from skilled manpower to durable raw materials and reliable technology—ensures smooth operations, enhances productivity, and allows standard equipment to be fully utilized for consistent, high-quality outputs. Together, these practices create a strong foundation for sustainable business growth. The synergy between quality planning, improvement, and resources also strengthens compliance with industry standards, ensuring reliability and long-term customer trust. By embedding these practices into daily operations, organizations not only achieve better financial outcomes but also establish themselves as leaders in product excellence and operational effectiveness.

RECOMMENDATIONS

1. Management of the table water producing companies should introduce checkpoints at every stage of production to detect defects early, reduce rework costs, and maintain high-quality standards.
2. Management of the table water producing companies should support creative solutions and adopt new technologies that can improve product design, reduce material wastage, and enhance productivity.
3. Management of the table water producing companies should work with reliable suppliers of raw materials and equipment to guarantee consistent quality inputs that directly impact final product excellence.

REFERENCES

- Ater, J.A., (2013). Challenges facing the implementation of total quality management practices in public secondary schools in Kenya. Unpublished MBA project. Nairobi: Kenyatta University.
- Ary, D. Jacobs, L.V. & Razavick, A. (2007). *Introduction to research in education*. Winstons, Inc.
- Demirbag, M., Tatoglu, E., Tekinkus, M., & Zaim, S. (2006). An analysis of the relationship between TQM implementation and organizational performance: Evidence from Turkish SMEs. *Journal of Manufacturing Technology Management*, 17(6), 829–847.
- David, M. (2001, 2007). *The concept of Strategy in the context of shifting development. Developing a measure of knowledge management behaviors* Routledge

- Dhafer Al-Qahtani, N., Sa 'ad Alshehri, S., & Abd'Aziz, A. (2015). The impact of Total Quality Management on organizational performance. *European Journal of Business and Management* (7)
- Sila, I. & Ebrahimpour, M (2003). Examination and comparison of the critical factors of total quality management (TQM) across countries. *International Journal of Production Research* 41(2), 235-268.
- Tenner, A. R., & DeToro, I. J. (1992). *Total quality management: three steps to continuous improvement*. Addison-Wesley Longman, Incorporated.
- Terziovski, M., & Samson, D. (1999). The link between total quality management practice and organizational performance. *International Journal of Quality & Reliability Management*, 16(3), 226-237.