Leadership Styles, Maintenance Practices, and Customers' Involvement in Water Service Management

Rodalyn Berdin

Guimaras State University Mclain, Buenavista Guimaras

Abstract
This study examined the relationship between leadership styles, maintenance practices, and customers' involvement in water service management in the District of Antique for Fiscal Year 2025. Specifically, it sought to describe the respondents' profiles, determine the levels of leadership styles, maintenance practices, and customer involvement, identify significant differences based on profile variables, and analyze the relationships among the variables. The study involved 95 respondents consisting of managers, technical staff, administrative personnel, and active customers, who were selected through purposive sampling. Data were gathered using a researcher-developed questionnaire that was validated by experts and pilot-tested, yielding a Cronbach's alpha of 0.85. Statistical analyses included mean, frequency, percentage, Mann–Whitney U test, Kruskal–Wallis H test, and Spearman's rho correlation at a 0.05 level of significance. Results showed high levels of transformational, transactional, and participative leadership , maintenance practices, and customers' involvement. No significant differences were observed across respondent profile variables. However, significant positive relationships were found among leadership styles, maintenance practices, and customers' involvement. These findings indicate that effective leadership positively influences operational maintenance and encourages stronger customer participation. The study concludes that leadership, maintenance practices, and customer involvement are interconnected factors that are essential to achieving sustainable, reliable, and efficient water service delivery. It recommends strengthening participative leadership, enhancing maintenance responsiveness, and promoting greater customer engagement in conservation and decision-making initiatives.

Keywords: Leadership Styles, Maintenance Practices, Customers' Involvement, Water Service Management, Sustainability, District of Antique

INTRODUCTION

Leadership plays a vital role in the effective management of water utilities, as it influences decision-making, operational performance, and the implementation of sustainable practices. Various leadership styles, including transformational, transactional, and participative leadership, have been shown to significantly affect organizational effectiveness, employee motivation, and service delivery outcomes (Northouse, 2021). In water utilities, strong leadership is particularly important in ensuring efficient resource management, timely infrastructure maintenance, and responsiveness to the needs of the community (Alegre, Marques, & Simoes, 2016).

Maintenance practices are equally critical to the sustainability and reliability of water supply systems. Regular and preventive maintenance helps reduce system breakdowns, ensures the continuous delivery of safe water, and minimizes costly emergency repairs (Tynan & Kingdom, 2005). When maintenance activities are guided by clear policies and supported by effective leadership, water districts are better positioned to achieve operational efficiency and service reliability.

Customer involvement has also gained recognition as an essential component of effective water service management. Active participation of customers through feedback, issue reporting, and involvement in water conservation initiatives has been linked to improved service quality, higher customer satisfaction, and stronger community stewardship of water resources (Marques, 2010; OECD, 2015). Engaging customers not only enhances accountability but also supports the long-term sustainability of water utilities.

In the District of Antique, water supply systems continue to face challenges related to infrastructure limitations, increasing demand, and environmental pressures. Understanding the interaction between leadership styles, maintenance practices, and customer involvement is therefore crucial in improving service delivery and ensuring operational sustainability. This study examines these variables among 95 respondents from water-related institutions and consumers in the district for Fiscal Year 2025. Specifically, it aims to describe respondent profiles; assess leadership styles, maintenance practices, and customer involvement; determine significant differences based on profile variables; and analyze the relationships among the three variables. The findings are expected to provide insights that can guide management strategies, strengthen community engagement, and support sustainable water service delivery.

Methodology

This study employed a descriptive–correlational research design to examine the relationship between leadership styles, maintenance practices, and customers' involvement in water service management in the District of Antique for Fiscal Year 2025. This design was appropriate as it allowed for the description of existing leadership approaches, operational practices, and levels of community engagement while determining relationships among variables without manipulation.

The study involved 95 respondents, including water district managers, technical personnel, administrative staff, and customers who were actively engaged in water services. Purposive sampling was used to ensure that participants had direct involvement in the management, operation, or utilization of water services. Respondents were described according to position, years of experience, educational attainment, and type of involvement.

Data were collected using a researcher-developed questionnaire that was validated by experts in water utility management and community engagement. The instrument measured leadership styles (transformational, transactional, and participative), maintenance practices (preventive maintenance, regular inspections, and emergency repairs), and customers' involvement (feedback provision, issue reporting, participation in conservation programs, and engagement in decision-making). Pilot testing resulted in a Cronbach's alpha of 0.85, indicating high reliability.

Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to determine the levels of the variables. Inferential analyses included the Mann–Whitney U test and Kruskal–Wallis H test to identify significant differences across respondent profiles, while Spearman's rho correlation was used to determine relationships among variables at a 0.05 level of significance. Ethical considerations, including informed consent, voluntary participation, and confidentiality, were strictly observed.

Results

The respondents consisted of managers (30.5%), technical staff (28.4%), administrative personnel (21.1%), and customers (20.0%). Most respondents had less than ten years of experience, held a bachelor's degree, and were actively involved in water service operations or consumption, indicating a relatively young and educated workforce and customer base.

Leadership styles obtained an overall mean of 4.14, interpreted as High. Transformational leadership scored the highest ($M = 4.20$), reflecting strong vision-setting, motivation, and support for personnel development. Transactional leadership followed with a mean of 4.12, indicating effective rule enforcement and performance monitoring. Participative leadership scored 4.10, suggesting that while stakeholder input is considered, further improvement in shared decision-making is possible.

Maintenance practices recorded an overall mean of 4.11, also interpreted as High. Preventive maintenance ranked highest ($M = 4.18$), followed by regular inspections ($M = 4.12$) and emergency repairs ($M = 4.03$). These findings indicate consistent maintenance implementation, though responsiveness during emergencies may still be strengthened.

Customers' involvement yielded an overall mean of 4.08, interpreted as High. Feedback provision ($M = 4.15$) and issue reporting ($M = 4.12$) were the strongest indicators, while participation in conservation programs ($M = 4.05$) and involvement in decision-making ($M = 4.00$) were relatively lower. This suggests that customers are engaged primarily in reactive forms of participation.

Inferential analysis revealed no significant differences in leadership styles, maintenance practices, or customers' involvement when grouped by profile variables ($p > 0.05$). However, significant positive relationships were found between leadership styles and maintenance practices ($r = 0.548$), leadership styles and customers' involvement ($r = 0.523$), and maintenance practices and customers' involvement ($r = 0.537$), all at $p = 0.000$. These results indicate that effective leadership contributes to better maintenance performance and increased customer engagement.

Discussion

The findings indicate that effective leadership, particularly transformational leadership, plays a crucial role in strengthening both maintenance practices and customer involvement. Leaders who inspire, motivate, and support personnel are more likely to foster adherence to maintenance standards and encourage a culture of service quality. The strong emphasis on preventive maintenance aligns with previous research highlighting proactive maintenance as essential to ensuring reliable water service and minimizing disruptions (Tynan & Kingdom, 2005).

The high level of customer involvement, particularly in feedback provision and issue reporting, demonstrates a positive relationship between water districts and their consumers. However, lower levels of participation in decision-making and conservation programs suggest opportunities for enhancing participatory approaches. The significant positive relationships among leadership styles, maintenance practices, and customer involvement emphasize their interdependence, suggesting that improvements in leadership effectiveness can simultaneously strengthen operational performance and community engagement.

Conclusion

The study concludes that water districts in the District of Antique demonstrate high levels of leadership effectiveness, maintenance practices, and customer involvement. Transformational leadership emerged as the most dominant style, positively influencing operational adherence and staff performance. Maintenance practices, particularly preventive maintenance, are consistently implemented, contributing to system reliability. Customers actively participate in reporting concerns and providing feedback, although their involvement in decision-making and conservation initiatives remains limited. The significant relationships among leadership styles, maintenance practices, and customer involvement highlight the critical role of leadership in promoting both operational efficiency and community participation, ultimately supporting sustainable and reliable water service delivery.

Recommendations

For Water District Management: Strengthen participative leadership practices to further involve employees and customers in decision-making. Continue prioritizing preventive maintenance while enhancing responsiveness to emergency repairs.

For Customer Engagement: Increase customer participation in conservation programs and sustainability initiatives through awareness campaigns, educational activities, and incentive-based approaches.

For Policymakers and Stakeholders: Develop policies and support mechanisms that promote leadership development, efficient maintenance systems, and active community engagement in water management.

For Future Research: Conduct further studies focusing on customer satisfaction, financial performance, and long-term operational outcomes, or expand the scope to multiple districts to validate and generalize the findings.

References

1. Alegre, H., Marques, R. C., & Simoes, P. (2016). Governance and efficiency in water utilities: Evidence from Portugal. Water Resources Management, 30, 2809–2823.
2. Marques, R. C. (2010). Measuring service quality in the water sector. International Journal of Public Sector Management, 23(6), 539–552.
3. Northouse, P. G. (2021). Leadership: Theory and practice (9th ed.). Thousand Oaks, CA: Sage Publications.
4. OECD. (2015). Water governance in OECD countries: A multi-level approach. Paris: OECD Publishing.
5. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12–40.
6. Tynan, N., & Kingdom, W. (2005). Investment in water supply and sanitation services in developing countries: Trends, challenges, and the way forward. World Bank Working Paper.
7. United Nations. (2017). Sustainable Development Goal 6: Ensure availability and sustainable management of water and sanitation for all. New York: United Nations.
8. World Bank. (2018). Water supply and sanitation in the Philippines: Turning finance into services for the future. Washington, DC: World Bank.