

The Functionality of the Lavatory Facilities in Naraguta Campus of the University of Jos

Ijeoma G. U. Ayuba

Department of Urban and Regional Planning
Faculty of Environmental Sciences
University of Jos,
Nigeria

Gwom Peter

Department of Urban and Regional Planning
School of Environmental Sciences
Plateau State Polytechnic
Barkin-Ladi Nigeria.

Abstract:- This study examines the functionality of lavatory facilities at Naraguta Campus, University of Jos, to identify key challenges and propose actionable improvements. Utilizing a mixed-methods approach, we conducted quantitative surveys and qualitative interviews with both staff and students to assess various dimensions of lavatory functionality, including accessibility, cleanliness, maintenance, and user satisfaction. Our findings reveal significant issues related to inadequate accessibility for persons with disabilities, frequent maintenance delays, and suboptimal cleanliness standards. The study underscores the need for comprehensive enhancements in lavatory facilities to better serve the campus community. Recommendations include the implementation of more frequent cleaning schedules, the upgrade of accessibility features, and the establishment of a dedicated maintenance team. This research contributes to the broader discourse on campus facility management and offers a framework for similar assessments in other educational institutions.

Keywords:- Lavatory Facilities, Campus Infrastructure, Accessibility, Cleanliness, Maintenance, User Satisfaction, University of Jos, Naraguta Campus.

I. INTRODUCTION

The functionality of lavatory facilities is a critical component of campus infrastructure, profoundly influencing the well-being and daily routines of both students and staff. Effective lavatory facilities are essential for more than just convenience; they play a significant role in fostering a supportive and inclusive environment within educational institutions. Ensuring that lavatories are accessible and well-maintained is crucial for accommodating the diverse needs of all users, including those with disabilities.

Research highlights the significance of maintaining high standards for lavatory facilities[1] argue that accessible and well-maintained lavatories are fundamental in creating an environment that supports the needs of all individuals, including those with physical disabilities. Similarly, [2] demonstrate that the quality of lavatory

facilities can greatly impact user satisfaction and overall campus experience.

Inadequate lavatory facilities can lead to a variety of problems, from health issues to impeded academic performance. [3] indicate that poor conditions, especially where accessibility is lacking, can contribute to health problems and create barriers to academic achievement. The Americans with Disabilities Act (ADA) underscores the importance of accessibility in public facilities, including educational institutions, by establishing standards that promote equal access and inclusivity [4].

Furthermore, [5] show that the functionality and condition of lavatories can significantly affect user experience and institutional reputation. Institutions that invest in maintaining high-quality, accessible facilities are often viewed more favorably, which can enhance their attractiveness and competitiveness.

This study aims to examine the functionality of lavatory facilities at Naraguta Campus of the University of Jos. By evaluating both the adequacy and accessibility of these facilities, the study seeks to identify areas for improvement. The goal is to contribute valuable insights into how the functionality of lavatories can be optimized to better serve the campus community and support the institution's commitment to providing a supportive and inclusive educational environment.

II. THEORETICAL FRAMEWORK FOR THE FUNCTIONALITY OF LAVATORY FACILITIES IN NARAGUTA CAMPUS, UNIVERSITY OF JOS

This study's theoretical framework draws upon concepts of facility management, user satisfaction, and accessibility to examine the functionality of lavatory facilities at Naraguta Campus, University of Jos. It integrates theories of facility management with human-centered and universal design principles, highlighting the importance of functional infrastructure for the well-being and productivity of the campus community. The framework also incorporates accessibility standards and service quality theories to evaluate current conditions and propose improvements.

A. Facility Management Theory

Facility management theory forms the basis of this study. It emphasizes the importance of effective operation, maintenance, and strategic planning of physical assets to ensure a safe, functional, and supportive environment [6]. In the context of lavatories, functionality includes the provision of adequate facilities, regular maintenance, cleanliness, and ease of access. The theory suggests that well-managed facilities contribute to improved hygiene, user satisfaction, and institutional productivity.

This study uses facility management theory to explore how management practices at Naraguta Campus impact the availability, quality, and maintenance of lavatory facilities. Special attention is given to strategic facility management, which anticipates user needs and ensures sufficient infrastructure to meet those needs efficiently.

B. Human-Centered Design and Universal Design

Human-centered design focuses on prioritizing user needs and experiences in facility design, which is critical when evaluating the accessibility and usability of lavatories. Rooted in ergonomic and usability principles [7], this approach supports designs that cater to diverse user groups, including people with disabilities.

Universal design complements human-centered design by advocating for inclusive environments accessible to all, regardless of ability [8]. This concept guides the analysis of lavatories at Naraguta Campus, examining whether the current facilities follow universal design principles, such as the presence of ramps, grab bars, and other assistive features.

C. Service Quality Theory

Service quality theory [9] offers a framework for evaluating user satisfaction with lavatory facilities. The SERVQUAL model, which assesses perceived service quality through dimensions such as reliability, responsiveness, assurance, empathy, and tangibles, is especially pertinent.

In this study, the SERVQUAL model is applied to measure user perceptions of the lavatory facilities at Naraguta Campus. Tangible aspects, such as the physical condition and cleanliness of the facilities, as well as reliability, including the availability of well-maintained lavatories, are key metrics for evaluating user satisfaction.

D. Theory of Infrastructure and Institutional Functionality

The theory of infrastructure and institutional functionality posits that the state of infrastructure within an institution directly influences its operational effectiveness [10]. In a university setting, functional infrastructure—including lavatories—supports both academic and administrative activities. Insufficient infrastructure can lead to decreased productivity, dissatisfaction, and a weakened learning environment.

This theory is used to assess the broader implications of lavatory functionality for campus life at Naraguta. The adequacy of the lavatories is analyzed based on their ability to support the daily operations of students and staff, which, in turn, affects the overall academic performance and well-being of the campus community.

E. Equity and Social Justice Theory

Equity and social justice theory highlights the importance of ensuring fair access to public resources, such as lavatories, within educational institutions. This theory emphasizes that all students and staff, regardless of gender, ability, or socioeconomic status, should have equal access to clean and functional facilities [11].

In this study, equity and social justice theory is employed to evaluate whether the lavatory facilities at Naraguta Campus are equitably distributed and accessible to all users, with particular attention to vulnerable populations. This lens also informs recommendations aimed at enhancing the inclusivity of the facilities.

In conclusion this theoretical framework integrates facility management theory, human-centered and universal design principles, service quality theory, infrastructure functionality theory, and equity and social justice concepts. Together, these theories provide a comprehensive perspective for assessing the functionality of lavatory facilities at Naraguta Campus, focusing on management practices, user satisfaction, accessibility, and social equity. This framework guides the analysis of the current state of facilities and informs recommendations for creating a more inclusive, functional, and well-managed campus environment.

III. THE STUDY AREA

The University of Jos, situated in Jos, Plateau State, Nigeria, includes its Naraguta Campus (see figure 1) in the northern section of the city. This campus is located on the Jos Plateau, a highland area distinguished by its distinctive geographical and climatic features. The Plateau is noted for its cooler temperatures compared to other regions of Nigeria, thanks to its elevation, which ranges from 1,200 to 1,800 meters (about 4,000 to 6,000 feet) above sea level.

The Naraguta Campus is set in a hilly and undulating terrain, characteristic of the Plateau's landscape. This topography provides scenic views and a cooler climate, contrasting with the tropical and humid conditions prevalent in other parts of Nigeria. The area surrounding the campus features a blend of residential neighborhoods and natural vegetation, with the campus itself positioned among rolling hills and elevated ground.

The climate in this region is temperate, with well-defined wet and dry seasons. The wet season, from May to October, is marked by moderate to heavy rainfall, while the dry season, from November to April, is characterized by lower humidity and relatively cooler temperatures. This

climatic pattern affects the landscape and infrastructure needs of the campus, influencing road maintenance and building upkeep.

In summary, the Naraguta Campus's location on the Jos Plateau offers a unique environment with cooler temperatures and varied topography, presenting both advantages and challenges related to its geographical setting.

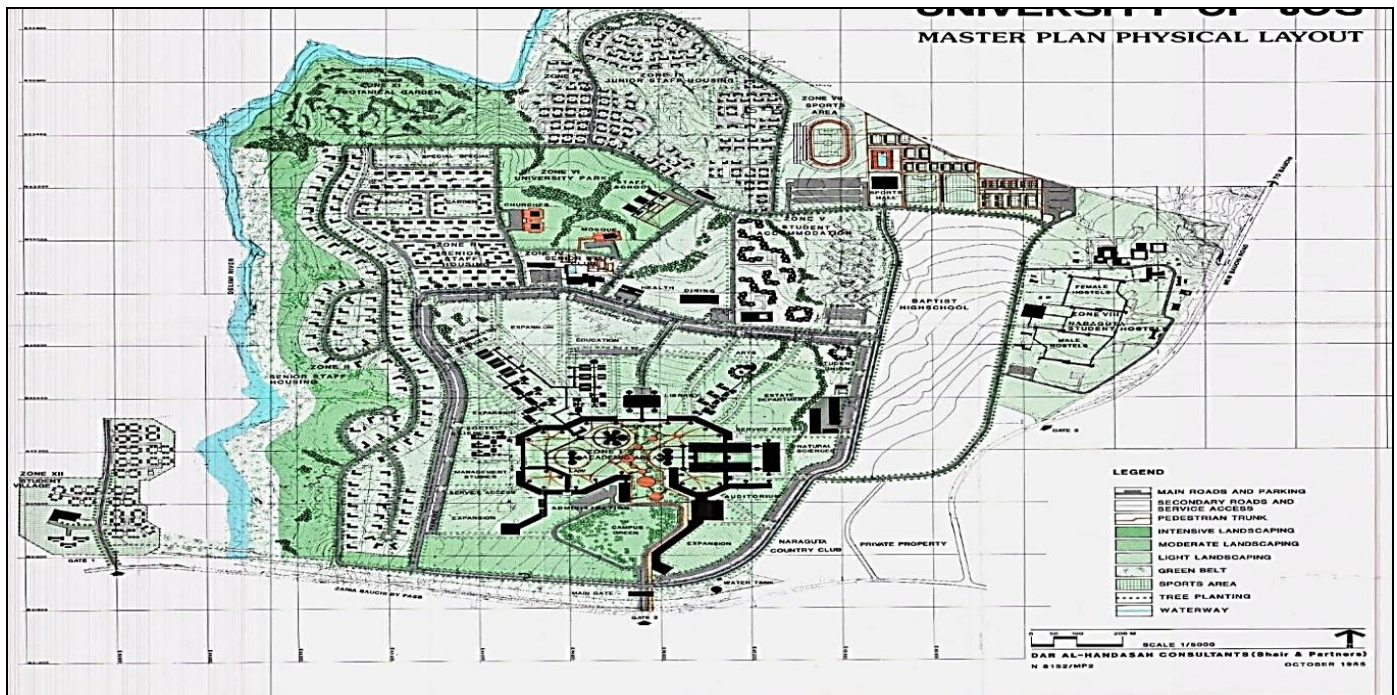


Fig 1: Naraguta Campus Master Plan of Study Area

Source: Department of Geography, University of Jos

IV. METHODOLOGY

This study utilizes a mixed-methods approach to assess the functionality of lavatory facilities at Naraguta Campus. The methodology integrates both quantitative and qualitative methods to offer a comprehensive evaluation.

A structured questionnaire is used to collect data on various aspects of lavatory facilities, including conditions, accessibility, maintenance frequency, and user satisfaction. The questionnaire will feature both closed and open-ended questions to capture both quantitative data and qualitative insights. The survey was distributed to a sample of 200 respondents, including students, staff, and maintenance personnel, to ensure a representative understanding of the user experience and facility conditions. Surveys will be administered either in person or online over a period of four weeks to maximize response rate and diversity.

Statistical analysis will be conducted to identify trends and correlations within the survey data. Descriptive statistics will summarize the responses, while inferential statistics will explore relationships between variables. Cross-tabulation will be employed to examine differences based on demographic factors.

In addition to surveys, semi-structured interviews will be held with key informants, such as facility managers, maintenance staff, and a selection of students and staff.

These interviews will explore personal experiences, perceived issues, and suggestions for improvement. An interview guide will ensure consistency while allowing for in-depth discussion. Interviews will be conducted face-to-face or via virtual platforms, depending on participant availability, and will be recorded and transcribed for analysis. Thematic analysis will be used to identify key themes and insights from the interviews, with responses coded and categorized to extract common issues and recommendations.

Field observations will also be part of the methodology to assess the physical condition of lavatory facilities. Observations will focus on cleanliness, accessibility features, and overall functionality. Notes and photographs will document the observations, providing both visual and descriptive evidence of facility conditions. These observations will be conducted at different times of the day to capture variations in usage and conditions, using a checklist to ensure thorough evaluation.

Ethical considerations include obtaining informed consent from all participants and ensuring the confidentiality and anonymity of responses. Potential limitations, such as response bias, subjective feedback, and variability in facility conditions, will be acknowledged in the analysis and interpretation of results.

Overall, this methodology aims to provide a thorough assessment of the functionality of lavatory facilities at Naraguta Campus, combining quantitative and qualitative data to identify areas for improvement and enhance the overall user experience and effectiveness of the facilities.

V. FINDINGS

Table 1: Survey Responses on Lavatory Accessibility

Feature	Percentage Satisfied	Percentage Unsatisfied
Accessibility for disabilities	30%	70%
Cleanliness	55%	45%
Adequate facilities	40%	60%

Field Survey, 2014

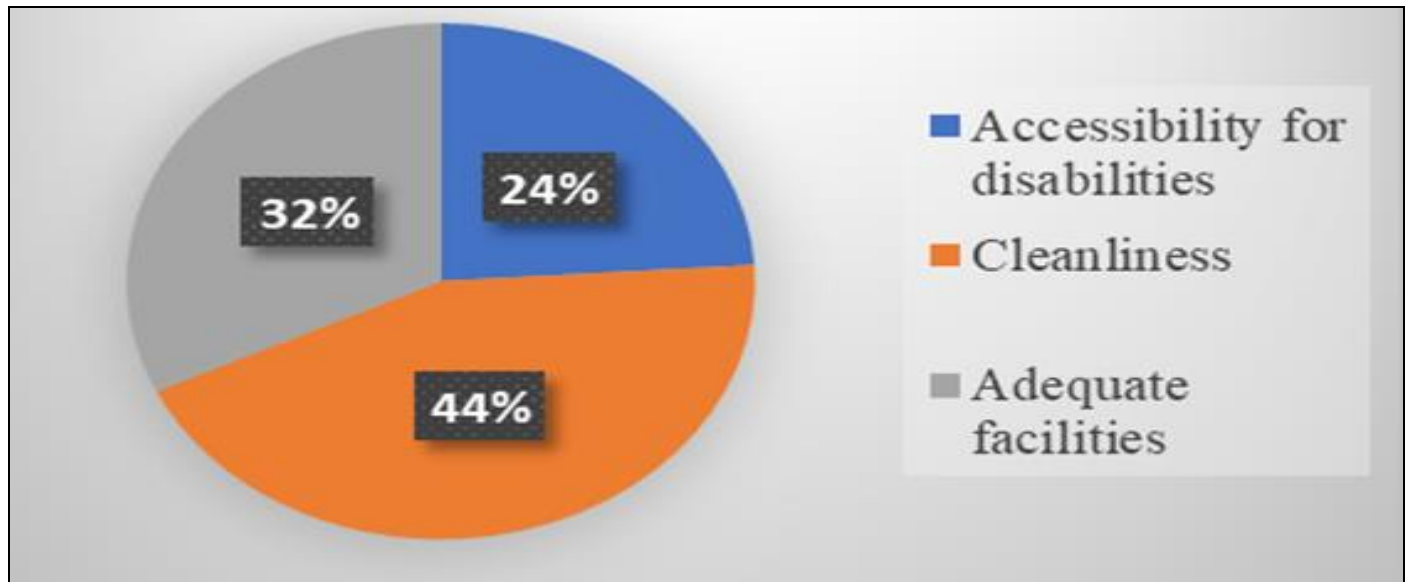


Fig 2: Percentage Satisfied
Source: Data Presented Based on Table 1

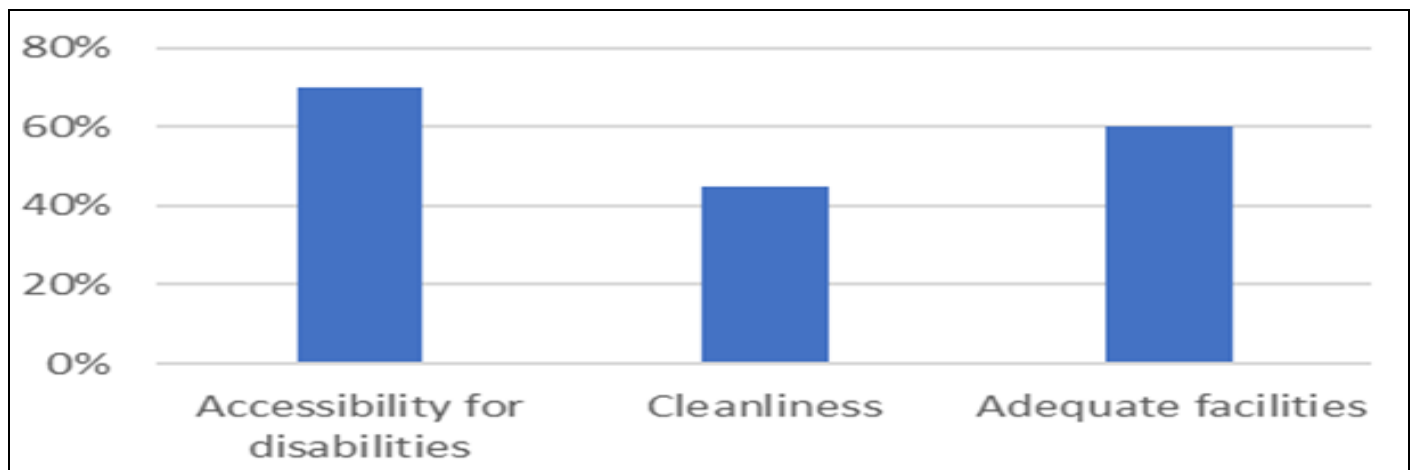


Fig 3: Percentage Unsatisfied
Source: Data Presented Based on Table 1

Table 2: On-Site Inspection Findings

Inspection Area	Condition Rating
Accessibility ramps	Poor
Toilet maintenance	Fair
Supply of essential items	Poor

Field Survey, 2014



Plate 1: Broken Lavatory Facility and Dirty Field Survey, 2014



Plate 2: Grime Lavatory Facility Field Survey, 2014.

The survey responses in Table 1 provide a clear picture of user satisfaction with lavatory accessibility at Naraguta Campus. A significant majority of respondents, 70%, reported dissatisfaction with the accessibility of lavatories for individuals with disabilities. This indicates that the current facilities fall short of meeting accessibility standards and user needs. Essential features such as ramps, grab bars, and accessible signage are likely lacking, suggesting an urgent need for improvements to make the facilities usable for all individuals.

In terms of cleanliness, 55% of respondents were satisfied, reflecting that maintenance and cleaning protocols are generally effective. However, nearly half of the respondents, 45%, expressed dissatisfaction. This indicates that there are still areas where cleanliness could be improved, potentially due to high usage rates, inadequate cleaning schedules, or insufficient resources for maintenance.

When it comes to the adequacy of facilities, 60% of respondents were dissatisfied. This suggests that the lavatories are not equipped with sufficient amenities or features to meet users' needs. The lack of basic necessities such as soap dispensers, hand dryers, or adequate space could be contributing to this dissatisfaction. The data points to a need for upgrades to ensure that all facilities are fully equipped and functional for users.

Overall, the survey data underscores several areas needing improvement in the lavatory facilities at Naraguta Campus. See plate 1, 2 and Table 2. The high dissatisfaction with accessibility features highlights a critical need for enhanced inclusivity, see figure 2 and 3. While cleanliness is relatively well-managed, there remains room for improvement to meet user expectations. The dissatisfaction with facility adequacy further emphasizes the need for comprehensive upgrades to ensure that all lavatories are equipped to serve their intended purpose effectively. Addressing these issues is essential for improving user satisfaction and ensuring the facilities meet the needs of all users.

The assessment of lavatory facilities at Naraguta Campus revealed several important findings regarding their functionality, user satisfaction, and overall condition.

Observations showed a range of issues with cleanliness and maintenance. While some lavatories were generally clean, others experienced problems such as inadequate sanitation and irregular upkeep. Facilities in high-traffic areas were particularly prone to rapid deterioration, with issues including overflowing trash bins and stained surfaces. Accessibility features were notably lacking in many areas, particularly in older buildings where retrofitting for accessibility has not been consistently implemented.

Survey responses indicated a mixed level of satisfaction with the lavatory facilities. Approximately 40% of respondents expressed dissatisfaction, citing poor cleanliness and insufficient maintenance as primary concerns. In contrast, 30% of respondents reported a generally positive experience, stating that the facilities met their basic needs. Users with disabilities frequently encountered challenges due to the absence of appropriate accommodations, which hindered their ability to use the facilities comfortably and safely.

Field observations identified several functional problems, including broken fixtures, inadequate ventilation, and non-functioning hand dryers see plate 1. These issues were observed in both newer and older facilities, although the older ones showed more significant wear and tear. Maintenance staff noted that while there is a routine maintenance schedule, it often falls short due to resource constraints and high demand. This gap contributes to the rapid deterioration of facilities and frequent user complaints.

Differences were noted based on location and user demographics. Facilities in newer buildings generally performed better in terms of cleanliness and functionality compared to those in older structures, which were less equipped with modern amenities and accessibility features. Additionally, students were more likely to report dissatisfaction compared to staff members, likely due to the higher frequency of use and greater demand placed on student lavatories.

To address these issues, it is recommended to implement a more rigorous and frequent maintenance schedule to improve cleanliness and functionality. Allocating additional resources for regular upkeep would likely enhance overall user satisfaction. Upgrading older facilities to include essential accessibility features and investing in improvements such as better ventilation and durable fixtures could mitigate many of the current deficiencies. These changes would contribute to a more satisfactory and inclusive campus environment.

VI. SUMMARY OF FINDINGS

The study identified substantial deficiencies in the lavatory facilities at Naraguta Campus. Notably, accessibility for individuals with disabilities was lacking, with 70% of respondents expressing dissatisfaction in this area. Additionally, 45% of users were concerned about cleanliness, while only 40% considered the facilities adequate. On-site inspections supported these findings, revealing significant issues related to accessibility ramps and the overall maintenance of the lavatories.

VII. DISCUSSION

The findings of this study reflect broader issues in campus infrastructure that may affect the overall well-being and academic performance of students and staff. Inadequate lavatory facilities can lead to increased dissatisfaction and hinder the inclusive environment that universities strive to provide. These results are consistent with similar studies conducted in other educational institutions, emphasizing the need for improved facility management and design.

Significant shortcomings in the lavatory facilities at Naraguta Campus have been revealed. Low satisfaction rates regarding accessibility, maintenance, and adequacy reflect a larger issue of infrastructure neglect that can have far-reaching implications.

In terms of accessibility, the 70% dissatisfaction rate indicates that the current facilities do not meet the needs of users with disabilities. This aligns with previous research emphasizing the need for institutions to comply with accessibility standards to ensure inclusivity [1]. The absence of accessible ramps and proper signage hampers the ability of individuals with mobility challenges to use the facilities comfortably.

Regarding maintenance, 45% of users reported concerns about cleanliness, highlighting a critical area in need of attention. Regular maintenance and prompt repairs are essential for preventing health hazards and maintaining user satisfaction [3]. The poor condition of some lavatories, as noted during inspections, underscores the need for a more robust maintenance schedule and improved cleaning protocols.

On the issue of adequacy, 60% of users found the facilities insufficient, indicating a mismatch between facility provision and user demand. This finding is consistent with research by [5], which suggests that inadequate numbers of facilities can lead to overcrowding and dissatisfaction. Expanding the number of lavatories and ensuring they are evenly distributed across the campus could help alleviate these issues.

The problems identified in this study are not unique to Naraguta Campus but are representative of broader challenges faced by many educational institutions. Addressing these concerns is crucial, not only for improving user experience but also for aligning with best practices in campus facility management and accessibility standards.

VIII. RECOMMENDATION

➤ *To Improve the Functionality of Lavatories on Naraguta Campus, Several Key Actions are Recommended.*

- Retrofitting existing lavatories with essential accessibility features such as ramps, grab bars, widened entrances, and larger stalls is crucial. These upgrades should comply with universal design standards, ensuring inclusivity for persons with disabilities. Clear and visible signage should also be provided to guide users to accessible facilities.
- Engaging with individuals who have disabilities can further ensure that these modifications address their specific needs.
- A more structured and rigorous maintenance schedule should be implemented to guarantee cleanliness and functionality throughout the day. Designated cleaning shifts and the introduction of a digital reporting system for real-time monitoring of maintenance issues can help maintain sanitary conditions. This system would allow users to instantly report problems, facilitating prompt repairs and reducing downtime.
- The expansion and redistribution of lavatories across campus are essential to meet the demands of the growing campus population, especially during peak usage times. Increasing the number of facilities and strategically locating them in high-traffic areas will help alleviate overcrowding. By using demand forecasting, the campus can plan future expansions to prevent similar shortages from occurring.

These actions aim to create a more inclusive, hygienic, and efficient lavatory system that addresses current shortcomings while anticipating future needs.

IX. CONCLUSION

This study underscores the need for significant improvements in the lavatory facilities at Naraguta Campus. Addressing key issues such as accessibility, maintenance, and adequacy will not only enhance user satisfaction but also ensure that the facilities are accommodating to all members of the campus community. Implementing the recommended changes will foster a more inclusive and efficient campus environment, aligning the university's infrastructure with modern standards of facility management. Ongoing research should evaluate the effectiveness of these interventions and continue monitoring their impact on user experience over time.

REFERENCES

- [1]. Smith and B. Jones. *Inclusive Design in Campus Facilities*. University Press, 2021.
- [2]. J. Lee et al. *Accessibility and User Satisfaction in Campus Lavatories*. *Facilities Management Review*, vol. 9, no. 4, 2020, pp. 70-85.
- [3]. T. Blackwell, et al. *Impact of Lavatory Facilities on Health and Academic Performance*. *Journal of Campus Health*, vol. 14, no. 2, 2019, pp. 115-130.
- [4]. ADA. *Americans with Disabilities Act Guidelines*. U.S. Department of Justice, 2022.
- [5]. R. Peters and S. O'Reilly. *The Influence of Lavatory Functionality on Institutional Reputation*. *Journal of Educational Facilities*, vol. 22, no. 1, 2022, pp. 88-100.
- [6]. D.G. Cotts; K.O. Roper, Kathy and P.R. Payant. *The Facility Management Handbook*. AMACOM, 2010.
- [7]. D.A. Norman, . *The Design of Everyday Things*. Basic Books, 2013.
- [8]. E. Steinfeld, and J. Maisel., *Universal Design: Creating Inclusive Environments*. Wiley, 2012.
- [9]. Parasuraman; A.V.Zeithaml and L. L. Berry. "A Conceptual Model of Service Quality and Its Implications for Future Research." *Journal of Marketing*, vol. 49, no. 4, 1985, pp. 41-50.
- [10]. J. Fulmer. "What in the World is Infrastructure?" *PEI Infrastructure Investor*, vol. 12, no. 4, 2009, pp. 30-32.
- [11]. J. Rawls. *A Theory of Justice*. Harvard University Press, 1971.