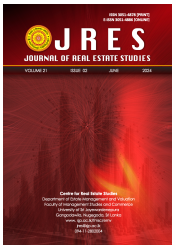

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Maintenance Culture of Public Buildings in the Central Region of Ghana

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ABSTRACT

The public buildings experience poor maintenance, and this is sometimes attributed to neglect and lack of funds, and this results in a decline, user dissatisfaction, and a cycle of neglect again. The purpose of this research is to evaluate the maintenance practices of some selected public buildings in the Central Region of Ghana. A mix of stratified and random sampling techniques was used to select 80 (maintenance personnel and users) respondents from the Development Offices of the University of Cape Coast (UCC) and Cape Coast Technical University (CCTU) in Ghana. The questionnaires were administered online, and quantitative data were analyzed using Statistical Package for Social Sciences (SPSS) version 26 and Microsoft Excel with descriptive statistics and correlations. The study results revealed that maintenance-related cultural factors were appreciated most as compared to other factors like teamwork and collaboration. Increased community participation may also be brought about through campaigns and partnerships. New technologies for building health monitoring were considered as appropriate investments, while funds for training the maintenance personnel were deemed necessary. The study reveals gaps in bureaucracy, planning, and roles and responsibilities in Ghana's maintenance culture. It calls for a comprehensive strategy to improve this culture, including funding, reducing red tape, embracing technology, and promoting public awareness and staff development. Clear roles and responsibilities, along with performance indicators, are also crucial. The study, targeting the Central Region, helps understand regional disparities in challenges and opportunities. It uses a mixed-methods approach and considers individual and organizational levels to understand maintenance activities in a developing environment. Although the sample size may limit generalization, the study provides valuable information for policymakers and facility managers aiming to prolong the lifespan and minimize maintenance costs of public buildings in Ghana.

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1. INTRODUCTION

Public buildings play the role of supporting structures in society and are much more than just structures that house people. They serve as public spaces for interaction with the community, providing opportunities for social interaction and offering essential services (Yarfi et al., 2017; Farzana, 2019; Burns et al., 2023). The durability of these structures is of paramount importance to achieve the lowest possible lifecycle costs and facilitate the delivery of safe and suitable environments for users (Abdullah et al., 2014; Amoako & Verter, 2022). However, the effective maintenance of public buildings in Ghana is a challenge.

Generally, the problem of infrastructural decay in residential, commercial, and educational facilities in Ghana has received much attention due to factors like corruption, delayed payments, inadequate planning, and supervision that pose threats to public safety (Dick Sagoe et al., 2023; Mbamali, 2013). This is worrying, especially given that commercial 3.27%, residential 8.73% and education 0.8% of the building stock in Ghana are public buildings based on the EDGE Buildings data obtained in 2022 (EDGE Buildings, 2022). The adverse effects of delayed maintenance are multifaceted and are seen to affect even expensive government infrastructures and thwart long-term conservation initiatives (Roslan et al., 2014). The resulting loss of the building fabric and finishes not only reduces the stock of national wealth but also endangers the safety and health of the occupants (Twuamai-Ampofo et al., 2017; Ofori et al., 2015; Ugwu et al., 2018).

This is true because maintenance, which is the work that is required to retain functionality, has strong relations with culture (Mésároš et al., 2023; Breesam & Jawad, 2021). A good maintenance culture, which entails the maintenance of structures, is crucial in reversing the decline, safety and preservation of values (Tijani et al., 2016; Kportufe, 2015). However, due to scarce resources for the maintenance of public structures in developing nations like Ghana, these structures are deteriorating and show signs of wear and tear (Azman et al., 2016). Other causes include defects in buildings, customer dissatisfaction, and interruptions in services (Chan et al., 2018).

To this end, the purpose of this study will be to assess maintenance practices in selected public buildings in the Central Region of Ghana. Thus, its emphasis is to capture differences within this regional area in terms of challenges and opportunities for maintenance. This study is, therefore, ready to bring development to knowledge about how the maintenance practices of public infrastructures, cultural beliefs and use of resources in the Ghanaian setting can be enhanced.

2. LITERATURE REVIEW

2.1 Challenges Facing Maintenance of Public Buildings

Currently, Ghana does not have maintenance funding, and there is a disparity between the total cost and quality of the maintenance materials required to maintain public buildings (Agyekum & Amudjie, 2023). This puts immeasurable pressure on institutions' financial wallets to fund the accelerated decay of structures while promoting construction. Corrective and preventive maintenance work primarily aims at improving timely and inexpensive repairs; thus, the work is done considering its costs (Krit, 2023).

These challenges are not exclusive to Ghana, as Kportufe's (2015) study focused on the absence of maintenance culture in public buildings in the heart of Accra, the capital of Ghana found that a lack of funding, inadequate technical expertise, and a general disregard for the importance of maintenance were key contributors to

the deterioration of public buildings. As was revealed in the Malaysian context (Olanrewaju et al., 2010), fluctuations in political agendas and lack of funding weaken the improvement of maintenance culture (Mergel, 2017).

Ergut and Yüzer 2016 and Dhanda and Prasad (2018) noted that the frequency and intensity of maintenance depend on the age and the condition of the existing public buildings and the climatic conditions. It is in this regard that Awasho and Alemu (2023) noted in their evaluation of the defects of public buildings in Ethiopia that the characteristics of the constructed buildings, especially the design and materials used, also determine the level of building maintenance and their cost (Han & Kim, 2017).

As stressed by Sani et al. (2012), public awareness and understanding of the importance of building maintenance would help rally resources and support. This is in line with issues relating to maintenance culture development in managing public infrastructures and buildings.

2.2 Maintenance Culture in Other Regions and Countries

Most of the developing countries, including Ghana, have not developed a maintenance culture because of a lack of resources, capacity, training and emphasis on maintaining infrastructures (Rocca & Sanfilippo, 2018). The systematic review by Hauashdh et al. (2020) on building maintenance practices in Malaysia, similar to the study in Nigeria by Kearney et al. (2019), identified problems such as funding, managerial issues and lack of appreciation for the importance of maintenance.

There are usually standard maintenance cultures established in developed countries, such as preventive maintenance and integration of technologies and regulations (Ogunbayo et al., 2022). Nevertheless, challenges may exist because of deteriorating infrastructure, limited funding, and numerous priorities, as highlighted by Sarbini et al. (2021) in their systematic review of maintenance challenges and recommendations. Research done in the USA has revealed that delayed maintenance results in increased costs and risks and, therefore, the importance of proper maintenance management strategies (Babashamsi et al., 2022).

Comparative studies provide information on such strategies. For instance, a study on public and private building maintenance in Ghana showed that private facilities had better maintenance because of better motivation and accountability (Prempeh et al., 2022), meaning that incentives can boost the maintenance culture. Adegoriola et al. (2021) state that technical and cultural factors should be considered for managing heritage building maintenance.

2.3 Improving Maintenance Culture

Organisational objectives are closely related to the effectiveness of maintenance practices (Engdahl & Hattrick, 2022). Positive maintenance culture includes engagement, accountability, goal congruence, communication, and organisational commitment (Smith et al., 2019; Kearney et al., 2019). Intelligent approaches such as effective performance measurement systems, CMMS and IoT-connected equipment and business benefits of BIM can improve maintenance performance (Chen & Wong, 2020; Dahake Sheikh, 2023). Training and skill development assist in incorporating the new technologies (Dahake & Sheikh, 2023). Johnson and Martinez (2017) opine those alliances help in the sharing of information and resources. Rewards and incentives influence maintenance staff (Lee & Kim, 2018; Johnson & Martinez, 2017).

3. METHODOLOGY

This study population encompassed maintenance management personnel and users of public buildings within two tertiary institutions in the Cape Coast Metropolis, Central Region of Ghana: The University of Cape Coast (UCC) and the Cape Coast Technical University (CCTU). These institutions were chosen due to the vast infrastructure and difficulties in maintaining them. The study set out to assess the maintenance culture of public buildings related to these institutions. For data, a survey method was used, where participants were given written consent questionnaires on the Internet (online) (Thompson & Johnson, 2022). This approach provided a timely source of data. It enabled the researchers to gather data from a huge population of maintenance staff and building users spread over a wide geographical region in both institutions. A stratified sampling technique covers the entire population and sub-sections (Thompson & Johnson, 2022). Based on age, gender, and level of education, the groups were stratified into different classes called strata. Such stratification was deemed necessary because the number of years of exposure to implementing the maintenance culture and understanding the term as a concept could differ depending on the above demographic variables. Systematically selected from within each stratum in proportion to common points in the population, the samples give assured and statistically adequate data. The target sample was, therefore, 80 respondents from the Development Offices of both UCC and CCTC, involving only the buildings maintained within four to six years, tapping into previous data collected (see Table 1). It was another criterion to guarantee that the sample comprised buildings with relatively current reports on their respective maintenances pertinent to the study.

Table 1: Sample Size

	Two Blocks	**Two Blocks**	**Sample Size**
Development Officer	1	1	**80**
Maintenance Officer	1	1	
Workers/ Labourers	30	27	
Students	13	6	
Total	**45**	**35**	

Data was collected through an online questionnaire chosen for its efficiency and ability to reach a geographically dispersed sample (Soni et al., 2023). The questionnaire items were aimed to capture respondents' attitudes and experiences about the influence of the maintenance culture concerning public buildings, community involvement in maintenance, and investment. A categorical scale from one (Strongly disagree) to five (Strongly agree) was employed to measure respondents' varied views (Thompson & Johnson, 2022). Data analysis was performed using Statistical Package for Social Sciences (SPSS-version 26) and Microsoft Excel. Quantitative data was described using frequencies, percentages, means, and standard deviations (Thompson & Johnson, 2022). Therefore, the subsequent sections of the study focused on providing a greater perspective on factors influencing maintenance culture, ways of improvement, and the approaches that can sustain maintenance culture in Ghanaian tertiary institutions' public buildings. To improve the reliability of the proposed methodology, further research should involve a larger number of subjects and examine more public structures in different regions. Also, using other data collection techniques like interviews or focus group discussions

could give a better perception of the factors influencing maintenance culture in Ghana's public institutions.

4. RESULTS AND DISCUSSION

4.1 Demographic Characteristics of Respondents

The analysis of the respondents' gender reveals that the majority (56 - 70%) were males and females (24 - 30%) of the total number of respondents. The majority (45 - 56.25%) of the respondents were from the institution 'A', and the remaining respondents (35 - 43.75%) were from the institution 'B'. Table 2 shows that most respondents were within the age range of 31–40 years (32–40%). This was followed by those aged 20–30 (28–35%). The smallest number of respondents were within the age range of 50 years and above (8–10%). Most respondents (29–36.25%) had Higher National Diploma (HND) certificates. This was followed by respondents with a bachelor's Degree (21-26.25%). The lowest number of respondents had a doctoral degree (5, 6.25%).

The respondents (70%) were male, comprising individuals aged 31-40, which reflects the demographics of Ghana's maintenance workforce. This is consistent with previous studies highlighting gender disparities in the construction sector (Azman et al., 2016). Educational attainment was diverse, potentially influencing maintenance approaches due to varying levels of technical knowledge.

Table 2: Age Range and Educational Qualification

Age range	Frequency	Percent (%)
20 – 30	28	35
31 – 40	32	40
41 – 50	12	15
51 and above	8	10
Highest educational qualification		
Diploma	15	18.75
HND	29	36.25
Bachelor's Degree	21	26.25
Master's Degree	10	12.5
Doctorate Degree	5	6.25

4.2 Impact of Maintenance Culture on Public Buildings

Table 3 shows that the culture of places (beliefs, values, and attitudes, and how these influence the behaviour of its members) was ranked as the highest among the five elements of maintenance culture, with a mean value of 4.01 and a standard deviation of 3.58. This is followed by good policy systems (define issues and implement strategies to produce a positive result), with a mean value of 3.99 and a standard deviation of 3.56. The least among the five elements of maintenance culture was teamwork (planning and working together as a group, with a mean value of 3.75 and a standard deviation of 3.37.

The results highlight a strong emphasis on organisational culture and policy systems in shaping maintenance practices, aligning with previous research (Tijani et al., 2016) that underscores the importance of both cultural values and structured processes. The relatively lower ranking of teamwork suggests a potential area for improvement, as collaborative efforts are known to enhance maintenance efficiency and problem-solving (Kearney et al., 2019). The significant correlation between the "culture of place and good policy systems" underscores the need for institutions to cultivate a shared sense of responsibility for building maintenance.

Table 3: Maintenance Culture

Element	Frequency					M	SD	R
	1	2	3	4	5			
Working Plan (represents the formal road map for the project)	2	7	20	31	20	**3.75**	3.37	4th
Teamwork (planning and working together as a group)	4	6	19	29	22	**3.74**	3.38	5th
Culture of places (the beliefs, values, and attitudes and how these influence the behaviour of its members)	-	3	19	32	26	**4.01**	3.58	1st
Good policy systems (define issues and implement strategies that will produce a positive result)	-	4	20	29	27	**3.99**	3.56	2nd
Training and education (having the ability to pursue knowledge on maintenance)	2	-	25	32	21	**3.88**	3.45	3rd

M: Mean; SD: Standard Deviation, R: Ranking

Table 4 shows that public awareness campaigns could improve the importance of maintaining public buildings, ranked first among the four factors of community engagement in maintenance culture, with a mean value of 4.19 and a standard deviation of 3.71. Collaborative efforts between local authorities and the public would benefit maintenance culture, with a mean value of 4.08 and a standard deviation of 3.74. The least among the four factors, community engagement in maintenance culture, involved the community in maintenance decisions, which could lead to better results, with a mean value of 3.70 and a standard deviation of 3.30.

The strong support for public awareness campaigns and collaborative efforts with local authorities resonates with findings from Sani et al. (2012) and Hamzah and Ismail (2016), who emphasize the role of

public understanding and participation in resource allocation and maintenance support. This suggests that community-based initiatives and educational programs could be effective strategies for enhancing maintenance culture in Ghana. However, the lower ranking of involving the community in maintenance decisions might indicate a perception of limited agency among citizens, potentially hindering the full realization of community-driven maintenance efforts.

Table 4: Community Engagement in Maintenance Culture

Factors	Frequency					M	SD	R
	1	**2**	**3**	**4**	**5**			
A sense of ownership among citizens would encourage them to report maintenance issues.	2	6	20	23	29	**3.89**	3.51	3rd
Involving the community in maintenance decisions could lead to better results.	4	3	19	41	13	**3.7**	3.3	4th
Collaborative efforts between local authorities and the public would benefit maintenance culture.	5	4	13	16	42	**4.08**	3.74	2nd
Public awareness campaigns could improve the importance of maintaining public buildings.	-	-	10	45	25	**4.19**	3.71	1st

M: Mean; SD: Standard Deviation, R: Ranking

Table 5 shows that investing in technology for monitoring building health could prevent major issues and was ranked as the most influential factor among the five resource allocation factors, with a mean value of 4.06 and a standard deviation of 3.63. The allocation of funds for training maintenance personnel is necessary, with a mean value of 4.05 and a standard deviation of 3.64. The least among the five factors of resource allocation was resource allocation for maintenance needs to be a priority for local authorities, with a mean value of 3.94 and a standard deviation of 3.56.

The prioritization of technology-driven monitoring and personnel training aligns with global trends emphasizing data-driven maintenance and skilled workforce

development (Dahake & Sheikh, 2023). However, the perceived lack of prioritization of maintenance by local authorities reflects the challenges of resource allocation in developing countries, as noted by Rocca and Sanfilippo, (2018). The relatively high mean scores for all factors suggest a general awareness of the importance of resource allocation, but the gap between awareness and implementation needs to be bridged through effective policy measures and budgetary reforms.

Table 5: Resource Allocation

Factors	Frequency					M	SD	R
	1	**2**	**3**	**4**	**5**			
Increasing the maintenance budget would result in better building conditions.	1	5	19	21	34	**4.03**	3.63	3rd
Allocation of funds for training maintenance personnel is necessary.	3	2	10	38	27	**4.05**	3.64	2nd
Modernising equipment and tools would improve maintenance efficiency.	1	5	19	21	34	**4.03**	3.63	3rd
Investing in technology for monitoring building health could prevent major issues.	-	2	22	25	31	**4.06**	3.63	1st
Resource allocation for maintenance needs to be a priority for local	3	4	17	27	29	**3.94**	3.56	5th

M: Mean; SD: Standard Deviation, R: Ranking

Table 6 shows that public buildings suffer from delayed maintenance because bureaucratic processes were ranked first among the five challenges of maintenance culture, with a mean value of 4.30 and a standard deviation of 3.88. Poor planning and organization led to neglect of maintenance tasks, with a mean value of 4.15 and a standard deviation of 3.74. The least among the five challenges of maintenance culture was the lack of skilled personnel for effective maintenance, with a mean value of 3.53 and a standard deviation of 3.12.

The predominance of bureaucratic delays and poor planning as major challenges aligns with observations by Olanrewaju et al. (2010) and Mergel (2017) regarding the negative impact of changing political priorities and administrative inefficiencies on maintenance culture. This calls for streamlined administrative processes and improved coordination among stakeholders. While the lack of

skilled personnel is perceived as less critical, continuous training and capacity building remain essential to ensure effective maintenance practices, especially as technologies evolve (Dahake & Sheikh, 2023).

Table 6: Challenges of Maintenance Culture

Challenges	Frequency					M	SD	R
	1	2	3	4	5			
Inadequate funding is a major challenge in maintaining public buildings.	5	1	23	11	40	4	4	4th
There is a lack of skilled personnel for carrying out effective maintenance.	4	2	28	39	7	4	3	5th
Public buildings suffer from delayed maintenance due to bureaucratic processes.	-	3	17	13	47	4	4	1st
Limited access to modern maintenance technologies hinders efficient upkeep.	1	2	28	11	38	4	4	3rd
Poor planning and organization lead to neglect of maintenance tasks.	-	4	19	18	39	4	4	2nd

M: Mean; SD: Standard Deviation, R: Ranking

Table 7 shows that preventive maintenance is more cost-effective than reactive repairs, ranked first among the five preventive measures, with a mean value of 4.16 and a standard deviation of 3.76. Regular inspections can identify potential issues before they become major problems, with a mean value of 4.07 and a standard deviation of 3.67. The least among the five preventive maintenance measures was the lack of a preventive maintenance strategy leading to increased breakdowns, with a mean value of 3.80 and a standard deviation of 3.67.

The strong endorsement of preventive maintenance aligns with research demonstrating its cost-effectiveness compared to reactive repairs (Yasin et al., 2019). The significant correlation between regular inspections and preventive maintenance effectiveness underscores the need for proactive strategies that identify and address potential issues before they escalate into major problems.

However, the relatively low ranking of educating maintenance staff and the lack of a preventive maintenance strategy highlight potential gaps in knowledge and implementation, echoing concerns raised by Kearney et al. (2019) regarding the need for comprehensive maintenance training and planning.

Table 7: Preventive Maintenance Measures

Measures	Frequency					M	SD	R
	1	2	3	4	5			
Preventive maintenance is more cost-effective than reactive repairs.	1	1	24	12	42	**4.16**	3.76	1st
A scheduled maintenance calendar would help in proactive upkeep.	3	2	19	25	31	**3.98**	3.6	3rd
Regular inspections can identify potential issues before they become major problems.	-	5	21	17	37	**4.07**	3.67	2nd
Educating maintenance staff about preventive measures is crucial.	2	-	23	39	16	**3.83**	3.4	4th
The lack of a preventive maintenance strategy leads to increased breakdowns.	3	1	19	43	14	**3.8**	3.38	5th

M: Mean; SD: Standard Deviation, R: Ranking

Table 8 shows that clear lines of responsibility for maintenance tasks are lacking and ranked first among the five factors of accountability and responsibility, with a mean value of 4.25 and a standard deviation of 3.82. The assignment of a designated person to oversee maintenance efforts would be beneficial, with a mean value of 4.11 and a standard deviation of 3.74. The least among the five factors of accountability and responsibilities were clear lines of responsibility for maintenance tasks, with a mean value of 3.50 and a standard deviation of 3.12.

The emphasis on clear lines of responsibility and the potential benefits of designated maintenance overseers underscores the importance of accountability mechanisms for ineffective maintenance management, as highlighted by Prempeh et al. (2022) in their comparison of public and private building maintenance in Ghana. The relatively low ranking of performance metrics suggests a

potential area for improvement, as the use of data-driven assessment tools can enhance transparency and incentivise better maintenance practices (Chen & Wong, 2020).

Table 8: Accountability and Responsibility

Factors	Frequency					M	SD	R
	1	2	3	4	5			
Clear lines of responsibility for maintenance tasks are lacking.	6	3	24	39	8	**3.5**	3.12	5th
Clear lines of responsibility for maintenance tasks are lacking.	-	2	18	18	42	**4.25**	3.82	1st
Performance metrics are needed to assess the effectiveness of maintenance.	1	2	15	36	26	**4.05**	3.62	3rd
Assigning a designated person to oversee maintenance efforts would be beneficial.	4	1	17	18	40	**4.11**	3.74	2nd
Poor accountability leads to neglect of routine maintenance tasks.	3	-	20	41	16	**3.84**	3.41	4th

M: Mean; SD: Standard Deviation, R: Ranking

5. SUMMARY OF FINDINGS

This study reveals a complex relationship of factors influencing maintenance culture in public buildings within the Central Region of Ghana. A predominantly male (70%) aged 31-40 relatively experienced workforce (Azman et al., 2016) prioritizes organizational culture and policy systems in maintenance practices (Tijani et al., 2016). However, the lower emphasis on teamwork (Kearney et al., 2019) suggests a potential area for improvement in collaboration and communication. Public awareness campaigns and collaborative efforts with local authorities are viewed as key drivers for community engagement in maintenance (Sani et al., 2012; Hamzah & Ismail, 2016), but community involvement in decision-making is perceived as less important. While technological advancements and personnel training are recognized as crucial resource allocations (Dahake & Sheikh, 2023), inadequate funding and bureaucratic hurdles remain

significant challenges, mirroring issues faced in other developing countries (Rocca & Sanfilippo, 2018; Olanrewaju et al., 2010; Mergel, 2017). Preventive maintenance is strongly endorsed, particularly regular inspections, aligning with its established cost-effectiveness (Yasin et al., 2019). However, a lack of clear accountability and designated overseers, as well as gaps in preventive strategy implementation, highlight areas for organizational reform (Prempeh et al., 2022; Kearney et al., 2019; Chen & Wong, 2020). Overall, the findings emphasize the need for a multi-faceted approach to improving maintenance culture in Ghana, encompassing both cultural shifts and practical interventions.

6. CONCLUSION AND RECOMMENDATIONS

This research systematically explores the maintenance culture of public buildings in Ghana's Central Region. Thus, the results emphasize the cultural aspect of maintenance practices regarding beliefs and attitudes. Notably, there is a disparity between acknowledging the value of teamwork and stakeholder collaboration as culture, while the ranking of the two is considerably low. As a result, there is a need for more research to address this gap and foster shared accountability for maintenance. Thus, raising the awareness of the community, conducting multiple informative activities, and cooperating with authorities and people have become the most effective strategies. In addition, resources needed for the monitoring of building health and that required for training maintenance personnel are also a priority area. To change the negative maintenance culture, new bureaucratic barriers must be overcome, and planning must be improved. Therefore, this study is aligned with existing theoretical perspectives that support the benefits of preventive maintenance over normal repairs. Introducing clear organizational structures and assigning certain workers primarily accountable for maintenance would enhance responsibility. Furthermore, a positive change in maintenance culture may improve the level of satisfaction in users with public buildings, which underlines the social significance of this study. From a theoretical perspective, this study helps to enhance existing knowledge about factors that affect the development of maintenance culture in developing nations. Nevertheless, due to the regional focus of this particular study, more research is needed to establish whether these results represent the whole country. Nevertheless, the study provides useful information to policymakers and facility managers who endeavor to improve the maintenance of public buildings in Ghana. The findings of this study have important policy implications for Ghana. Policymakers could use these findings to develop or enhance legislation or programs that may help create a positive maintenance culture. In particular, the emphasis of the study on the role of cultural factors suggests that appropriate policies should encourage cooperation by both clients and providers. This may include incorporating the lessons in school systems, conducting public awareness programs to market the value of preventive maintenance and designing systems that encourage collective maintenance. The study noticed bureaucratic processes and planning as major issues that may require policy change, and it focused on addressing administrative barriers and improving planning strategies. This could entail creating explicit maintenance protocols, outlining roles and duties for each party engaged in the maintenance process, and cutting down on bureaucracy and proceduralist approval for maintenance projects. Also, the specific recommendations made in the study about resource allocation, including the need to invest in technology and train maintenance personnel, can be considered policy-relevant. Some of the policies that

could be set could include funding for the development and implementation of building health monitoring systems, training programs for maintenance staff, and using financial incentives to encourage preventive maintenance within public buildings. By implementing these policy measures, Ghana can set up a viable and efficient system of managing its infrastructure and guarantee its public buildings' reliability, safety and durability. Nonetheless, the study has some limitations as it only focused on a particular region of Ghana. More studies should be conducted to establish whether these results apply to the country level. Furthermore, more research is required to determine the best approach to minimize the gap between knowledge and practice concerning cultural issues in maintenance. Studying the effects of particular policy measures on the maintenance culture could also be useful knowledge for policymakers and practitioners.

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