INFLUENCE OF EMERGENCY ALERT TECHNOLOGIES ON CAMPUS SAFETY AND ACADEMIC DELIVERY IN PUBLIC UNIVERSITIES IN RIVERS STATE

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Abstract

The study investigated the influence of emergency alert technologies on campus safety and academic delivery in public universities in Rivers State, Nigeria. Guided by two research questions and two hypotheses, the study adopted a descriptive survey research design, which enabled the systematic collection of opinions, experiences, and perceptions from respondents without manipulating variables. This design was appropriate as it provided insight into the existing state of emergency preparedness, safety awareness, and academic delivery within the university environment. The population comprised 2,286 senior lecturers from Rivers State University, University of Port Harcourt, and Ignatius Ajuru University of Education, while a sample of 340 respondents, including 118 males and 222 females, was selected through a multi-stage sampling technique involving purposive, stratified, and proportionate procedures. Senior lecturers were chosen for their administrative experience and involvement in institutional policy development, particularly in safety and academic quality assurance. Data were collected using a validated instrument titled "Campus Emergency Alert Assessment Scale (CEAS)" with a Cronbach's Alpha reliability coefficient of 0.80, indicating acceptable internal consistency. Mean and standard deviation were used to analyze the research questions, and the z-test was employed to test the null hypotheses at a 0.05 significance level. Findings revealed that Mass Notification Systems and Panic Button Systems significantly enhanced campus safety and lecturers' academic delivery. Consequently, it was recommended that Deans and Heads of Departments develop and enforce comprehensive emergency communication policies defining the roles of emergency alert technologies in campus safety and academic delivery, and that university management and education agencies integrate emergency technology training into institutional policy frameworks.

***Keywords*:** Campus safety, emergency alert technologies, academic delivery, panic button, public university

Introduction

Amid growing concerns about security and emergency preparedness in tertiary education, the role of technology in safeguarding academic environments has become more pronounced. Emergency alert systems designed to disseminate timely warnings and critical safety instructions

have emerged as essential tools in reducing risk, managing crises, and preserving instructional continuity. Within the context of public universities in Rivers State, the need for such systems has intensified due to increasing incidents of violence, natural disasters, and institutional disruptions (Adepoju & James, 2023). Empirical evidence from Nigerian universities supports this reality. For example, Eze and Ezeanya (2022) found that digital emergency systems improved communication efficiency during crises in southeastern Nigerian universities, while Chukwu and Nnadi (2024) noted that inadequate campus safety infrastructure remains a leading cause of anxiety among university staff in the Niger Delta region. Similarly, Adebayo and Yusuf (2023) emphasized that emergency alert technologies have become critical to mitigating insecurity and protecting educational assets across Sub-Saharan African institutions. The use of real-time communication systems not only ensures quick dissemination of safety instructions but also minimizes panic and disruption during crises, thereby supporting a stable academic environment.

Emergency alert technologies refer to a suite of digital and automated systems designed to communicate real-time warnings and critical safety information across campus environments during emergencies. These technologies include mobile text alerts (SMS), email notifications, public address systems, sirens, emergency broadcast apps, digital signage, and more advanced solutions such as geo-fencing, AI-integrated surveillance, and panic button systems. In the context of public universities, especially in developing regions like Rivers State, these technologies serve as vital instruments for alerting staff and students about security threats, natural disasters, fire outbreaks, public health emergencies, or other unexpected disruptions that may jeopardize life and academic operations (Okonkwo & Igwe, 2023). Their primary function is to ensure rapid dissemination of actionable information that facilitates quick decision-making, coordinated responses, and containment of emergency situations.

Beyond ensuring physical safety, emergency alert technologies significantly impact lecturers' academic delivery by minimizing classroom interruptions, supporting remote coordination, and maintaining continuity of instruction. These technologies encompass various tools including SMS alerts, digital sirens, panic buttons, geo-fencing, and integrated mobile applications. Their adoption facilitates rapid communication between university authorities and stakeholders during emergencies, thereby minimizing confusion and disruption. In addition to their role in emergency management, these systems contribute meaningfully to academic performance by reducing lecturers' anxiety and enabling timely transitions to remote or hybrid instruction (Eze & Ezeanya, 2022). Additionally, these technologies can integrate with digital learning management systems (LMS), allowing lecturers to quickly shift to online delivery when physical attendance becomes impossible due to threats. Hence, emergency alert technologies are not merely reactive

tools but essential components of proactive academic management and institutional resilience in modern public universities.

This study focuses on two key systems: Mass Notification Systems (MNS) and Panic Button Systems. MNS are designed to broadcast alerts across multiple platforms like emails, SMS, loudspeakers, and mobile apps, providing clear guidance during threats such as intrusions, fire, or protests. Panic buttons, often installed in lecture halls or integrated into mobile devices, allow lecturers and staff to discreetly summon help in real time, reducing escalation and increasing responsiveness. These systems ensure that both lecturers' and students receive timely alerts, enabling quick protective actions that can save lives (Smith & Johnson, 2023). MNS can also integrate with other security technologies such as digital signage and social media platforms, creating a synchronized information network that keeps the entire campus informed and coordinated during crises (Perez, 2023).

Moreover, Mass Notification Systems are increasingly impacting lecturers' academic delivery by ensuring minimal disruption during emergencies and maintaining continuity of learning. In situations where physical presence is unsafe, MNS can alert lecturers and students to shift to online platforms temporarily, thus sustaining the academic calendar. Besides emergencies, universities now use MNS to inform faculty and students about critical academic information such as class cancellations, changes in venue, or important deadlines, thereby enhancing operational efficiency (Adams & Green, 2024). The reliability, speed, and adaptability of MNS make it a vital asset for creating a safe, resilient, and academically productive environment in public universities.

Panic Button Systems are discreet and accessible emergency alert devices or applications designed to allow individuals to instantly request urgent assistance during threatening situations. Installed physically in classrooms, offices, libraries, or even integrated into mobile devices, panic buttons trigger an immediate notification to campus security teams, sometimes coupled with automated alerts to nearby authorities (Thomas & Zhao, 2023). In public universities, panic button systems enhance campus safety by ensuring rapid incident reporting, minimizing response time during assaults, medical emergencies, or active shooter situations. These systems often include GPS tracking, silent alarm activation, and integration with campus-wide Mass Notification Systems, enabling precise and efficient responses even before a situation escalates (Peterson & Ahmed, 2023).

Beyond security, panic button systems contribute significantly to lecturers' academic delivery by providing a sense of safety and psychological reassurance within the teaching environment.

When lecturers feel protected against unforeseen threats, they are more likely to focus fully on instruction and students' engagement without fear or distraction (Onuoha & Edeh, 2024). In emergency scenarios, lecturers can discreetly trigger alerts without causing widespread panic among students, thus maintaining classroom control until help arrives. In the broader sense, the presence of panic button systems promotes an institutional culture of preparedness and resilience, essential for sustaining uninterrupted academic activities in the institutions.

Campus safety in public universities refers to the implementation of policies, technologies, and physical security measures designed to protect students, lecturers, staff, and visitors from potential threats such as violence, accidents, health crises, and natural disasters. It encompasses a wide range of initiatives including emergency preparedness, crime prevention programs, surveillance systems, access control, and rapid response protocols (Smith & Adeyemi, 2023). In the Nigerian context, particularly in Rivers State, increasing concerns over security challenges have intensified the demand for innovative safety frameworks that ensure a conducive and secure environment for academic activities (Ibe & Okafor, 2024). A safe campus environment fosters not only the physical well-being of its occupants but also their emotional and psychological security, which is critical for productive teaching, learning, and research.

Lecturers' academic delivery, on the other hand, pertains to the effectiveness, consistency, and quality of teaching, research supervision, mentoring, and intellectual engagements within the university setting. Academic delivery involves not just the transfer of knowledge but also the creation of interactive learning experiences that stimulate critical thinking and innovation among students (Johnson & Bassey, 2023). When campus safety is guaranteed, lecturers can focus more effectively on these responsibilities without fear of disruption or personal harm, thereby enhancing their instructional quality and scholarly output. In public universities in Rivers State, ensuring campus safety has increasingly been recognized as a critical factor that underpins the broader goals of academic excellence, staff productivity, and institutional reputation (Chukwu & Nnadi, 2024).

Campus safety is intricately linked to lecturers' academic delivery. When lecturers feel safe and supported by responsive emergency systems, they are more confident, focused, and productive in their teaching roles. Research shows that educators who work in secure environments demonstrate greater commitment and engagement in instructional duties (Eze & Ezeanya, 2022). Furthermore, well-coordinated emergency alert systems contribute to the efficient management of academic schedules during disruptions, such as strikes, protests, or health-related crises. In Rivers State, recent developments including increased incidents of campus-related crimes and infrastructural failures have highlighted the urgent need for universities to invest in emergency

alert technologies as a mechanism for sustaining educational productivity (Chukwu & Nnadi, 2024).

Moreover, the deployment of emergency technologies plays a strategic role in fostering institutional resilience and maintaining trust among students, staff, and the wider university community. With integrated platforms that offer both preventive and responsive solutions, university lecturers can ensure real-time incident tracking, rapid response coordination, and continuous safety audits (Chukwuemeka, 2024). This level of preparedness is essential in environments were limited security personnel and outdated infrastructure challenge effective safety management. For instance, tools like AI-enabled threat detection, geo-fencing alert systems, and facial recognition-based access control are being explored as proactive strategies in tertiary institutions globally (Obi & Alagbe, 2024). Such innovations not only mitigate risks but also enhance lecturers' ability to maintain continuity in academic delivery, even in volatile situations.

The influence of emergency alert technologies extends beyond the traditional confines of security; it touches on the very structure of academic excellence and institutional effectiveness. Public universities in Rivers State must recognize the dual value these systems offer, preserving life and improving academic outcomes. Through the adoption of modern safety technologies, institutions can better equip their campuses to face contemporary challenges while promoting a conducive environment for teaching and learning (Okonkwo & Igwe, 2023). As scholars and policymakers continue to explore the interface between education, technology, and security, evidence-based investments in emergency alert systems will be critical to sustaining the academic mission of universities in Rivers State and across Sub-Saharan Africa.

Statement of the Problem

In recent times, security challenges in public universities across Nigeria, including those in Rivers State, have escalated, thereby raising serious concerns about the safety of students, lecturers, and other university stakeholders. Reports from the National Universities Commission (NUC, 2023) and the Nigerian Police Force Annual Security Report (2022) indicate increasing cases of campus intrusions, thefts, violent protests, and even kidnappings, which have exposed critical weaknesses in existing campus security management systems. These incidents reveal the limitations of traditional systems such as manual gate checks, physical patrols, handwritten visitor logs, and reactive security responses that often fail to provide timely alerts during emergencies.

In contrast, modern emergency alert technologies, including Mass Notification Systems (MNS), mobile safety applications, and panic button devices, have been adopted in many global institutions as proactive mechanisms for real-time crisis communication and improved response coordination (Adebayo & Olawale, 2022). However, few studies in Nigeria have assessed the actual deployment, utilization, and effectiveness of these digital systems in enhancing campus safety and supporting lecturers' academic delivery. This represents a significant literature gap in understanding how technology-driven safety systems influence educational productivity. The Human Capital Theory (Becker, 1964) provides a useful lens for interpreting this relationship, suggesting that a secured and supportive work environment enhances the productivity and performance of academic staff. When lecturers feel safe and confident in their teaching spaces, they are more likely to engage in innovative pedagogical practices, maintain focus, and achieve higher instructional quality (Okon & Akpan, 2023).

Conversely, the absence or inefficiency of emergency alert systems may heighten stress, insecurity, and classroom disruptions, ultimately undermining academic outcomes. This study, therefore, investigates the influence of emergency alert technologies on campus safety and lecturers' academic delivery in public universities in Rivers State, with the goal of identifying gaps and proposing strategic solutions to enhance safety-driven academic environments.

Objectives of the Study

The main objective of the study was to examine the Influence of emergency alert technologies on campus safety and lecturers' academic delivery in Public Universities in Rivers State. Specifically, however, the objectives of the study were to:

1. Determine the extent to which Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

2. Find out the extent to which Panic Button Systems influences campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Research Questions

The study was guided by the following research questions:

1. To what extent do Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State?

2. To what extent do Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State?

Hypotheses

The study was guided by the following null hypotheses at 0.05 level of significance.

1. There is no significant difference between the mean opinion scores of male and female lecturers regarding the extent to which Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

2. There is no significant difference between the mean opinion scores of male and female lecturers regarding the extent to which Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Methodology

This study adopted the descriptive survey research design, which was considered appropriate because it enabled the collection of opinions, experiences, and attitudes from a large and diverse group of respondents without manipulating variables. The design was suitable for this study as it sought to determine the influence of emergency alert technologies on campus safety and lecturers' academic delivery in public universities in Rivers State. It allowed the researcher to describe the current state of emergency preparedness, safety awareness, and academic delivery in real institutional contexts. The population of the study comprised 2, 286 individuals, made up of male and female lecturers from three public universities in Rivers State, namely: Rivers State University (860), University of Port Harcourt (780), and Ignatius Ajuru University of Education (646)**.** These universities were purposively selected because they are the only public universities in Rivers State with similar academic and administrative structures and face comparable security challenges. 340 senior lecturers were also purposively chosen because of their experience, leadership responsibilities, and involvement in decision-making regarding campus safety, while students were included as direct beneficiaries of institutional safety measures.

The sample consisted of 118 male and 222 female senior lecturers, distributed proportionally according to the population of each institution. The sampling procedure involved three distinct stages: purposive sampling was used in selecting the three public universities in Rivers State and the senior lecturers in the institutions. Stratified sampling was used in classifying the respondents into the two gender groups (male and female). Proportionate sampling, however, was applied in distributing the total sample of 340 respondents among the 3 universities and gender groups based on their population ratios, ensuring representativeness and minimizing sampling bias. The instrument for data collection was a structured rating scale titled Campus Emergency Alert Assessment Scale (CEAS)**,** designed by the researcher. The instrument comprised two sections: Section A captured demographic details, while Section B contained items on emergency alert

technologies on campus safety and lecturers' academic delivery. The instrument was validated for content and face validity by three experts in the Department of Educational Management and Measurement and Evaluation. The reliability of the instrument was established using the Cronbach's Alpha method, yielding a reliability coefficient of 0.80**,** which indicated a high internal consistency. Data collected were analyzed using mean and standard deviation statistics to answer the research questions, while z-test statistics were used to test the null hypotheses at a 0.05 level of significance**.**

Results Presentation

Research Question 1: To what extent do Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State?

Table 1: Mean Ratings of Respondents on the Extent Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State

N	Items	Lecturers Male N= 118 $\bar{X}_1$	Std$_1$	Lecturers Female N=222 $\bar{X}_2$	Std$_2$	Average mean	Std	RMK
1.	By providing real-time updates on emergencies, Mass Notification Systems (MNS) helps lecturers plan responses without unnecessary evacuation or confusion.	3.70	0.88	3.75	0.84	3.73	0.86	HE
2.	In cases where physical campus access is unsafe (e.g., due to violence or natural disasters), MNS can be used to communicate shifts to virtual or hybrid learning.	4.35	1.16	4.41	1.11	4.38	1.14	VHE
3.	MNS allows lecturers to make informed decisions, such as postponing, relocating, or rescheduling lectures, thereby minimizing interruptions to academic delivery.	3.68	1.61	3.74	1.48	3.71	1.54	HE
4.	MNS helps lecturers continue teaching remotely, ensuring academic activities are not halted during prolonged emergencies.	3.57	0.93	3.63	0.90	3.60	0.92	HE
5.	MNS provides a reliable source of accurate, centralized information, which helps lecturers remain calm and focus on their responsibilities.	3.72	0.85	3.77	0.82	3.75	0.83	HE
	Aggregate Mean/SD for male and female lecturers	**3.80**	**1.17**	**3.86**	**1.03**	**4.56**	**1.06**	**VHE**

Source: *Field Survey, 2025*

Table 1 in response to research question 1 which states, to what extent do Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State had the following opinion scores for both male and female lecturers. Mean scores of the male lecturers to questionnaire items 1, 2, 3, 4 and 5 were 3.70, 4.35, 3.68, 3.57 and 3.72 with standard deviations of 0.88, 1.16, 1.61, 0.93 and 0.85 while the mean scores of the female

lecturers were 3.75, 4.41, 3.74, 3.63 and 3.77 with standard deviation of 0.84, 1.11, 1.48, 0.90 and 0.82. Furthermore, the mean set representing the average mean scores for both male and female lecturers were 3.73, 4.38, 3.71, 3.60 and 3.75; with standard deviation of 0.86, 1.14, 1.54, 0.92 and 0.83 respectively. The readings which were higher than the criterion mean of 3.00 indicated that Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State to a high exte

Research Question 2: To what extent do Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State?

Table 2: Mean Ratings of Respondents on the Extent Panic Button Systems influence Campus safety and lecturers' academic delivery in Public Universities in Rivers State

N	Questionnaire Items	Lecturers Male N= 118 $\bar{X}_1$	Std_1	Lecturers Female N=222 $\bar{X}_2$	Std_2	Average mean	Std	RMK
6.	Panic button systems provide lecturers with a quick and discreet way to alert campus security during emergencies such as intrusions, violence, or medical crises.	3.65	0.89	3.69	0.87	3.67	0.88	HE
7.	With panic buttons accessible in lecture halls and offices, lecturers can take immediate control during incidents without needing to leave students or rely solely on verbal communication.	4.19	1.33	4.20	1.29	4.19	1.31	HE
8.	Data generated from panic button activations (time, location, response actions) can help universities improve future emergency preparedness.	3.00	0.68	3.02	0.67	3.01	0.68	HE
9.	The use of panic buttons dramatically cuts down the time it takes for security personnel to be notified and respond.	3.07	0.78	3.09	0.78	3.08	0.79	HE
10.	The swift intervention of panic buttons helps de-escalate dangerous situations before they escalate, thereby maintaining a safer environment for academic delivery.	3.00	0.75	3.03	0.74	3.02	0.75	HE
	Aggregate Mean/SD for male and female lecturers	**3.38**	**0.89**	**3.41**	**0.87**	**3.39**	**0.88**	**HE**

Source: *Field Survey, 2025*

Table 2 in response to research question 2 which states, to what extent does Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State had the following opinion scores for both male and female lecturers. Mean scores of the male lecturers to questionnaire items 11, 12, 13, 14 and 15 were 3.65, 4.19, 3.00, 3.07 and 3.00 with standard deviations of 0.89, 1.33, 0.68, 0.78 and 0.75 while the mean scores of the female lecturers were 3.69, 4.20, 3.02, 3.09 and 3.03 with standard deviation of 0.87, 1.29, 0.67, 0.78 and 0.74. Furthermore, the mean set representing the average mean scores for both male and

female lecturers were 3.67, 4.19, 3.01, 3.08 and 3.02; with standard deviation of 0.88, 1.31, 0.68, 0.79 and 0.75 respectively. The readings which were higher than the criterion mean of 3.00 indicated that Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State to a high extent.

Hypotheses Testing

1. There is no significant difference between the mean opinion scores of male and female lecturers on the extent Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Table 3: Z-test Analysis on the Extent Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Respondents	N	$\bar{x}$	Std	DF	z-cal	z-crit	LS	Decision
Male Lecturers	118	3.80	1.17					
								Accepted
				338	0.57	±1.96	0.05	
Female Lecturers	222	3.86	1.03					

Source: *Field Survey, 2025*

Table 3 above shows Z-test Analysis on the extent Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State. The result on the table showed that there is no significant difference between the mean opinion scores of both male and female lecturers on the extent Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State. The result on the table further showed a z-calculated value of 0.57 which was less than the z-critical value of ±1.96 at 0.05 level of significance and with a degree of freedom of 338, since the z-calculated (0.57) was less than the z-tabulated (±1.96), the null hypothesis was accepted which states that there is no significant difference between the mean opinion scores of male and female lecturers on the extent Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

2. There is no significant difference between the mean opinion scores of male and female lecturers on the extent Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Table 4: Z-test Analysis on the Extent Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Respondents	N	$\bar{x}$	Std	DF	z-cal	z-crit	LS	Decision
Male Lecturers	118	3.38	0.89					
				338	0.86	±1.96	0.05	Accepted
Female Lecturers	222	3.41	0.87					

Source: *Field Survey, 2025*

The result on Table 4 above shows Z-test Analysis on the extent Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State. The result on the table showed that there is no significant difference between the mean opinion scores of male and female lecturers on the extent Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State. The result on the table further showed a z-calculated value of 0.86 which was less than the z-critical value of ±1.96 at 0.05 level of significance and with a degree of freedom of 338, since the z-calculated (0.86) was less than the z-tabulated (±1.96), the null hypothesis was accepted which states that there is no significant difference between the mean opinion scores of male and female lecturers on the extent Panic Button Systems influence campus safety and lecturers' academic delivery in Public Universities in Rivers State.

Discussion of Findings

The findings of the study are discussed as follows:

The result in Table 1 revealed no statistically significant difference between the mean opinion scores of male and female lecturers regarding the extent to which Mass Notification Systems (MNS) influence campus safety and lecturers' academic delivery in public universities in Rivers State ($z = 0.57$, $|z| < 1.96$, $df = 338$). This finding agrees with several empirical studies indicating that MNS effectiveness is largely shaped by message content, timing, and institutional structure rather than demographic factors. Han et al. (2015) found that clarity of alerts, perceived threat, and prior exposure were the main determinants of compliance with emergency notifications. Similarly, Gülüm et al. (2009) and Menn et al. (2021) observed that universities using well-coordinated notification systems recorded higher levels of safety awareness and improved

response coordination. The finding that MNS support academic continuity is consistent with Bartusevičienė et al. (2021), Peimani and Kamalipour (2021), and Watermeyer et al. (2021), who reported that timely alerts and digital coordination tools minimized disruption to learning during emergencies such as the COVID-19 pandemic.

However, other studies have reported contrasting evidence, suggesting that MNS may not always yield equitable or effective outcomes. Du et al. (2019) found that some faculty and students experience "alert fatigue," leading to reduced responsiveness over time. Alqurashi and Alamer (2022) observed gender-based differences in how lecturers perceive and react to institutional alerts, with female staff showing higher anxiety and lower trust in system reliability. Additionally, Olowokere and Olayinka (2023) reported that in Nigerian public universities, inconsistent alert dissemination and weak technological infrastructure limited the perceived benefits of MNS for both campus safety and teaching effectiveness. These contradictory findings indicate that while MNS are beneficial in principle, their impact depends on local infrastructure, training, and message credibility.

The result presented in Table 2 also indicated no significant gender difference in lecturers' perceptions of how Panic Button Systems influence campus safety and academic delivery in public universities in Rivers State ($z = 0.86$, $|z| < 1.96$, $df = 338$). This finding corresponds with studies showing that panic or duress alarms affect institutional safety mainly through usability and integration into security operations rather than demographic variations. Carr and Derouin (2023) found that although duress alarms increased perceived safety among healthcare workers, their effectiveness depended on training and user familiarity. Similarly, Campus Safety Magazine (2023, 2024) reported that universities with structured panic response protocols experienced stronger safety culture and higher user confidence. Lersilp et al. (2020) and Budi et al. (2021) confirmed that ease of use and accessibility are key determinants of acceptance and perceived protection among users. These studies support the present finding that Panic Button Systems can enhance lecturers' psychological security and teaching focus without gender-based disparity.

Nevertheless, a few studies contradict this observation. Hidayat et al. (2022) found that panic button systems in Southeast Asian universities often failed to produce the expected sense of safety due to poor system reliability and low user engagement. Furthermore, Gomez and Torres (2023) reported that female faculty tended to express higher levels of perceived vulnerability and dependence on panic systems than their male counterparts, indicating potential gender differences in emotional safety perception. Likewise, Nwankwo and Eze (2024) discovered that despite the presence of panic alert systems in some Nigerian universities, inadequate response

time and lack of staff awareness reduced trust in such technologies. These divergent findings suggest that the success of Panic Button Systems may rely on contextual factors such as institutional preparedness, cultural attitudes toward safety, and gender-based emotional responses.

Conclusion

The findings of the study affirm that emergency alert technologies, particularly Mass Notification Systems (MNS) and Panic Button Systems (PBS), significantly enhanced campus safety and lecturers' academic delivery in public universities across Rivers State. The results reveal that the adoption of these technologies appears to promote rapid emergency communication, foster a strong sense of psychological assurance among teaching staff, and minimize classroom disruptions caused by security uncertainties in public universities in Rivers State. Beyond their immediate protective function, these systems contribute to the broader goal of institutional resilience by enabling continuity in teaching, learning, and administrative operations during crises. To fully harness these benefits, universities and higher education institutions must invest in continuous training programs, routine system maintenance, and the establishment of clear operational frameworks that govern the use and monitoring of emergency alert systems. Such proactive measures could help cultivate a sustainable safety culture where lecturers feel secure, confident, and motivated to deliver quality education. Ultimately, integrating emergency alert technologies into Nigeria's higher education system is not merely a security upgrade but a strategic investment in academic excellence, institutional sustainability, and human capital development.

Recommendations

Based on the conclusions drawn from the study, the following recommendations are offered to enhance the impact of emergency alert technologies on campus safety and lecturers' academic effectiveness in public universities in Rivers State:

1. University management, particularly the Deans and Heads of Departments, should organize periodic training sessions for academic and non-academic staff on the use of emergency alert systems. These sessions should include practical drills, system demonstrations, and emergency response simulations to ensure that all personnel can use the technologies confidently and efficiently during actual emergencies.
2. University authorities should develop and implement clear policies that define the roles and responsibilities associated with the use of emergency technologies. These policies should outline activation procedures, escalation protocols, maintenance schedules, and

user access levels to ensure consistency and accountability in system usage. Ensuring the systems remain user-friendly, accessible, and technologically up-to-date will maintain their effectiveness and reliability.

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