

Navigating Uncharted Water: Crisis Management Cases in Flood-Prone Public Secondary Schools

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Abstract

Ineffective crisis management was a critical concern in schools. This study investigated the crisis management of teachers in flood-prone public secondary schools. I conducted a case study with five participants purposively selected. I analyzed information using thematic analysis. I found four emerging sub-themes on threats encountered by flood-prone schools, three under time resources, four under unpredictable events, and five for the outcomes of decisions and actions. A quantitative study may be done using the themes identified as variables and the emerging sub-themes as indicators. Flood recurs; hence, prevention is favored more than rehabilitation.

Keywords: Navigating uncharted water; crisis management cases; flood-prone public secondary schools

1. Introduction

Ineffective crisis management was a critical concern in schools. As schools are confronted with extraordinary circumstances and crises that can strike at any time without warning, crisis management skills are essential, and schools are expected to address the impact of the crisis at hand (Drake, 2018; Debes, 2021; Kwatubana & Molaodi, 2021).

In Iran, school crisis management was limited and underdeveloped (Hosseinighousheh et al., 2020). In Turkey, school leaders were perceived to be inefficient in responding during the crisis period (Ozdemir et al., 2024). In Lebanon, school leaders encountered significant challenges in basic needs and immediate crisis response (Elbedour et al., 2020). In the Philippines, crisis management and school leadership during disruptive times revealed that school leaders struggled with implementing effective crisis management practices (Espinosa et al., 2023).

The interruption of education due to crises, whether natural disasters, such as floods or other unforeseen events, could disrupt social and organizational practices and can severely impact educational institutions (Bozkurt et al., 2020; Sakurai & Chughtai, 2020; Chatzipanagiotou & Katsarou, 2023). Research showed that many schools appeared to be unprepared to meet the current and emerging crises in educational settings (Javed & Niazi, 2015). Given the inadequacy of many existing crisis management practices, it is essential to explore how schools are adapting their management approaches to face new and unpredictable crises. Hence, I

aimed to explore the crisis management practices of school leaders during crisis situations, focusing on the challenges and decisions they have faced.

By using a qualitative case study approach, my research sought to uncover the practical issues, insights, and potential solutions that can improve crisis management practices in the context of flood-related threats. Through this exploration, my study intended to contribute valuable insights into the preparedness and response mechanisms within schools during flood events and to highlight areas for improving crisis management practices.

1.1. Research Questions

This study aimed to investigate the crisis management of teachers in flood-prone public secondary schools. Specifically, it was guided by the following research questions:

1. What threats are encountered by flood-prone schools?
2. What are the time resources of flood-prone schools?
3. What are the unpredictable events associated with flood-related threats?
4. What decisions and actions emerged as outcomes of the flood crisis situation?

1.2. Theoretical Lens

This study was anchored on the Crisis Management Theory by Hermann (1963). It posited that in a crisis situation, a threat is posed to the essential goals or values of an actor. There is limited time for decision-making due to an approaching deadline and/or the increasing costs of inactivity. There are numerous unpredictable events or uncertainties connected to the situation, and hence, it is difficult to formulate a clear picture of the outcomes of the decisions and actions taken (Pursiainen, 2017).

1.3. Paradigm

In Figure 1 below, I illustrated the paradigm of my study. This paradigm showed how crisis situations posed serious threats to the school's goals and values, which require rapid decision-making and actions under time pressure and involve a high level of uncertainty. This perspective allows for a deeper understanding of how school leaders perceive threats, interpret evolving situations, and implement crisis management practices under pressure.

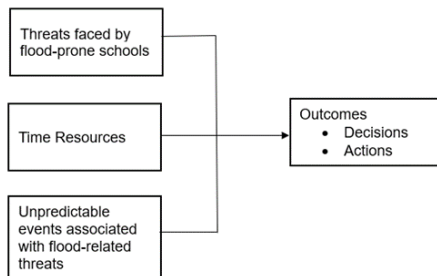


Fig.1. The Paradigm of the Study

2. Methodology

2.1. Research Design

My study employed a qualitative case research design to gain a comprehensive understanding of the phenomena, experience, and context.

2.2. Locale of the Study

I conducted my study in selected public secondary schools in Davao del Norte, Region XI, Mindanao, Philippines.

2.3. Participants and Sampling

My study was composed of five teacher-participants from public secondary schools. They served as key informants who underwent an in-depth interview, which allowed me to better understand their crisis management practices from their experiences and perspectives. The participant was selected through purposive sampling. By selecting the case or the individual it allowed me to focus in-depth on a phenomenon (Schoch, 2020).

2.4. Research Instrument

I used a semi-structured interview guide questionnaire during the interview. This allowed me to create an in-depth interview and have the freedom to ask questions spontaneously and explore the topics in more detail.

2.5. Data Collection

I utilized multiple sources of information for data collection. This includes in-depth interviews, personal observation, and gathering of documents or records, which form part of the triangulation of gathered data.

2.6. Data Analysis

I employed the thematic analysis technique to analyze the data. Thematic analysis is an approach that aims to identify patterns or themes of a qualitative data set (Braun et al., 2019).

2.7. Ethical Considerations

A qualitative study will achieve trustworthiness by demonstrating that the findings are dependable, credible, confirmable, and transferable (Stahl & King, 2020). I ensured that I allotted them sufficient time to review the informed consent and reiterated confidentiality, anonymity, and privacy. I ensured anonymity by using a pseudonym to hide the identity of my participants.

3. Results and Discussions

3.1. Threats Encountered by Flood-Prone Schools

Flood-related threats are one of the themes mentioned in the theory. This refers to the different risks and negative impacts as a result of flooding. These threats can affect the safety of the teaching and non-teaching personnel and the students, the continuity of classes, and the physical condition of the school environment. The participants revealed that the schools had encountered different flood-related threats. Based on the thematic analysis, I have generated four emerging sub-themes. These are impacts to school infrastructure damages, destroyed educational resources and student records, disruption of classes, and impassable roads.

Flood-related threats are a critical concern in school crisis management. They disrupt school regular operations and can endanger the safety and well-being of the students and the school community.

3.1.1. Floods are Damaging to the School Infrastructure

Serious threats to school infrastructure damage have both immediate and long-term effects on the learning environment. The participants reiterated that these damages include classroom, furniture, and fixtures, such as cabinets, tables, and chairs, school documents, and students' records. This finding affirmed the study of Mir et al. (2025), who emphasized that structural vulnerabilities such as the poor design and construction of the school buildings would have an immediate effect on deciding the levels of risk within these structures.

It was also noted that participants reiterated the impacts of infrastructure damage on students' learning. This finding affirmed the study of Bello et al. (2020), who emphasized its significant impact on education. Thus, all damages must be repaired because it is the school leaders' priority to ensure the safety of the students and school personnel when the school resumes.

It is a reminder to school leaders that after a disaster, compromised structural integrity creates hidden dangers that necessitate rigorous building safety inspections. Disasters that inflict damage upon schools and cause harm to children, teachers, and school leaders within those institutions. Hence, the safe reopening of school becomes a priority (Masten, 2021).

3.1.2. Flood Destroys Educational Resources and Students' Records

One of the most significant impacts of flooding in schools is the destruction of vital educational resources and students' records. These were mentioned by the participants as floodwaters can quickly damage textbooks, teaching aids, digital devices, students' records, and other pertinent documents of the schools. These findings were asserted in the study of Okpala (2025), who reiterated that flooding has destroyed reading materials, which delays pupils' time for learning. Likewise, Joshi (2024) explained that students who are affected by flooding have damaged their educational materials. This loss hindered their ability to study their course materials, potentially leading to poor academic performance. This was also emphasized by Thamtanajit (2020), saying that textbooks, computers, and many other school resources were destroyed during the flood.

3.1.3. Flood Disrupts Classes and Hinders Learning

Flooding causes major disruptions to the regular conduct of classes in flood-prone schools, making it one of the most immediate and visible threats to education. When floodwaters enter school grounds or surrounding areas, it often leads to the suspension of classes and temporary school closures.

At the onset of flooding due to weather disturbances, the local government unit issued a memorandum on the suspension of classes. The participants shared that they are monitoring the memorandum issuance and disseminating the information to the school stakeholders, especially the parents and the students, within a limited time so that the students will not miss school. They also mentioned that the late information on the

issuance of the memorandum caused some worries to the advisers due to the arrival of some students at school despite the flooding.

Listening to their responses, the participants revealed that disruption of classes causes learning gaps. This finding affirmed the study of Mir et al. (2025), who reiterated that floods caused schools and institutions to suspend classes. This resulted in the schools sustaining significant educational losses. Additionally, Lassa et al. (2023) emphasized that being affected by a flood means disruption and delays in schooling due to students and teachers who could not go to school due to blocked roads and flooded houses or classrooms. This was also discussed by Thamtanajit (2020), who emphasized that floods disrupted the daily school activities of children since the schools were affected and needed to be closed for weeks or even a month.

3.1.4. Flood Makes Roads Not Passable

Impassable roads are a significant flood-related threat that severely affects the safety, access, and daily operations of flood-prone schools. The participants revealed that teachers and students have difficulty due to blocked access routes from home to school. This finding affirmed the study of Lassa et al. (2023), who pointed out that the main reason for the disruption of schools was a problem with accessibility. This means that teachers and students could not even get to school. Additionally, Shi et al. (2022) described that during flood occurrences, some parts of the road networks were paralyzed, traffic was interrupted, and emergency vehicles could not pass, which resulted in significant delays and a reduction of accessibility to emergency response services.

Some participants also revealed during the interview that they have doubts and fear about passing through flood waters overflowing the roads, as it poses a danger to their lives. This finding affirmed the study of Fant et al. (2021), who elaborated that floods caused great damage to infrastructure or posed risks to public safety, particularly to commuters and riders.

3.2. Time Resources

Another theme in the crisis management theory was the existence of a limited time for decision-making due to an approaching deadline. This refers to the specific circumstances or factors that restricted how much time the school had to respond to or prepare for the dangers posed by flooding. This implies how time is managed, allocated, and limited before, during, and after flood events. The three emerging sub-themes based on the thematic analysis of the participants' responses. These are the implementation of contingency plans, communication challenges, and challenges in emergency responses.

In flood-prone schools, one of the most critical challenges during emergencies is the limited time available to respond once flood-related threats begin to emerge. I discussed the emerging sub-themes on time resources of the school.

3.2.1. Flood Complicates the Implementation of the Contingency Plan

One of the conditions for limited time or time pressure to respond to flood-related threats is the effective implementation of the contingency plan. However, the participants revealed that when it comes to contingency plans for flooding, their school was not focused on it. This led to chaos among teachers who did not know what the best thing to do during the crisis. The study by Singer et al. (2019) gave the school an idea of what steps of the contingency were overlooked. The study pointed out that school crisis plans and their protocols should be readily available to those school personnel who are directly responsible for carrying out these plans.

With the existence of time pressure due to limited time for decision-making, Lassa et al. (2023) stressed that in order to guarantee that every student gets home from school on time, school-based contingency

planning should incorporate specific scenarios involving schools, the relevant local government organizations, and village structures. Moreover, Perera et al. (2020) emphasized that the community's prompt response to natural disasters such as floods is related to how the community has a full understanding of the risks, which is part of the contingency and disaster preparedness plans. Most importantly, the contingency plan is not generalized; instead, it is specific and tailored to the community.

3.2.2. Flood Challenges Communication

One of the time resources during flooding was communication challenges. As I was listening to the responses of the participants, they revealed that there are communication challenges when information dissemination is done under time pressure, and miscommunication may occur due to information overload because of the decrease in the information channel. This finding affirmed the study of Pursiainen (2017) who emphasized challenges in information overload, uncertainty about what to share, and the potential for misinterpreted information.

Participants also emphasized that it is their role to inform their students and give updates not only to the students but also to the parents and the entire school community. This assertion supported the study of Marsen (2020), who pointed out that to avoid potential problems, school leaders are expected to show personal commitment and empathy, especially in a crisis. In addition, school heads revealed communication barriers such as miscommunication between school personnel, ineffective information dissemination, and the need to prioritize clear communication channels hampered smooth school operations.

3.2.3. Flood Impedes Emergency Response

One of the time resources during a crisis is the challenges in emergency response. Zebrowski (2019) reiterated that emergency response is a time-sensitive field that requires speed in an emergent crisis such as flooding; the demand for a speedy and flexible response is deemed necessary.

While listening to the participants' responses on time resources, they revealed that teachers have difficulty in asking for assistance from the emergency responders due to overwhelming tasks when crises occur. This finding is associated with the study of Perera et al. (2020), who pointed out that the risk perception of people is a major challenge in a flood-prone area as it affects people's attitude to be attentive to flood warnings. People who are in danger often compare the present flood scenarios to their prior warning response experiences, even though each flood is different because of shifting threats brought on by climate change. People had made the decision only to evacuate when they saw actual danger or harm. This caused the emergency responders to be overwhelmed in doing their tasks within a limited time, trying to rescue and bring the affected residents to safety.

Another issue related to the emergency response was emergency response time, as it takes longer to arrive. This finding affirmed the study of Tzavella et al. (2018), who reiterated that extreme flooding has severe consequences on road networks, which affect emergency response even in an urban environment. This particularly affects the increase in the emergency response time.

3.3. Unpredictable Events Associated with Flood-Related Threats

Flood-related threats often come with sudden and uncontrollable events that make preparation and response more difficult for schools. These unpredictable events refer to occurrences that happen without warning, change rapidly, or vary in severity, which makes it hard for school personnel to act in time. There were four emerging themes generated from the thematic analysis. These include unexpected incidents and injuries, power outages, the onset of flash floods, and delayed responses.

Flood-related threats are often intensified by a series of unpredictable events that catch schools off guard, making crisis management even more challenging. I discussed the emerging sub-themes on the various unpredictable events associated with flood-related threats.

3.3.1. Flood Sparks Unexpected Incidents and Injuries

Unexpected incidents and injuries during flood-related crises are classified as unpredictable events because they occur without warning and are often outside the control of school personnel or crisis responders. Despite preparations and safety measures, the chaotic and hazardous nature of floods creates an environment where accidents are likely, but their specific nature, timing, and severity are uncertain.

As I listened to the participants' responses, they revealed that they are afraid to respond quickly to flood-related threats because of the thought of flood-induced hazards, especially during nighttime. This finding affirmed the study of Ahmed et al. (2020) emphasized that incidents that occurred at night all reported the absence of adequate street lighting, as well as visibility due to moderate to heavy rain, and in some incidents, due to branches or broken parts of long trees on roads. From their findings, the authors also identified major reasons for flood-related accidents and deaths, which include underestimating the risks, overconfidence in the vehicle and driver's ability, past successful crossing experience, familiarity with place and crossings, alcohol and drug intoxication, ignoring warnings and indicators, fatigue, inappropriate flood depth markers, lack of warnings and inadequate risk indicators such as no road closure signs, lack of knowledge of assessing water hazards on the road, and incapacity to move or swim that led to drowning.

Additionally, Paterson et al. (2018) pointed out some flood-related health risks. These are deaths due to drowning, trauma, and other acute events such as orthopedic injuries and lacerations, hypothermia, electrocution, and even burns. Submerging in flood waters also poses immediate dangers to human health. Affected individuals can acquire communicable and noncommunicable diseases, which include skin and soft-tissue infections, gastroenteritis, and zoonotic infections such as leptospirosis. The authors also emphasized that flood crises have long-term effects which result in displaced settlements and worsened living conditions.

3.3.2. Flood Triggers Power Outage

During flooding, power outages often happen abruptly, triggered by factors such as heavy rainfall damaging electrical lines, short circuits, submerged transformers, or precautionary shutdowns by utility companies to avoid electrocution risks. While flooding itself may be anticipated through forecasts, the exact moment and extent of a power interruption are rarely known in advance, leaving schools unprepared for the immediate consequences.

The participants revealed that there was difficulty responding to flooding during nighttime due to a power outage in the area. In the study by Duffey (2020), he examined how extreme events like flooding damage infrastructure, causing failures and loss of electrical power to vital systems, and working on power restoration may take several days to weeks.

3.3.3. Sudden surges of water instigate flash floods.

Flash floods are a type of flooding that can happen within minutes to a few hours after intense rainfall, dam failure, or a sudden water release. Unlike slow-rising floods, flash floods develop quickly, often without visible warning signs, making them extremely unpredictable and dangerous, especially for schools located in low-lying areas.

The participants revealed that they were surprised by the sudden surge of water. They also noted that the intensity of the recent floods is surprisingly different from the past, which caught them unprepared. This finding affirmed the study of Paterson et al. (2018) and Ahmed et al. (2020) reiterated that the speed of onset of flooding poses a death risk, as flash flooding is more dangerous than floods with more gradual onset. The

fast-moving, rapidly rising flood water often surprised affected individuals, even causing accidents on the road. Citing an instance where some drivers negotiate floodwaters, which resulted in fatal incidents.

3.3.4. Flood Delays Response

A delayed response during a flood emergency is considered an unexpected event because it deviates from the anticipated timeline of action and assistance. While schools often prepare protocols assuming that help from local disaster response units, government agencies, or emergency services will arrive promptly, there are times when external factors cause significant delays, catching school personnel off guard. This issue was stressed by the participants during the interview. This finding affirmed to the study of Perera et al. (2020), who emphasized that delays in response can also be caused by the way the communication was channeled and the communication tools that were used. They cited how sirens and loudspeakers were employed as alternate forms of communication to reach outlying areas due to the restricted availability of media. However, because early warning goes through a series of stages before reaching volunteer organizations in charge of distributing the alerts using megaphones and other means, this could cause a delayed response. Floodwaters may have already risen by then, making evacuation routes riskier for the local people.

The issue of delayed response was associated with the study of Yu et al. (2020), who described that during flood occurrences, ambulance, fire, and rescue responders were overwhelmed with tasks under time pressure to assist the most vulnerable groups such as the elderly, young children and people with poor health to evacuate in safe places or evacuation areas. With the increase in flood magnitudes, this means that saving human lives will be the utmost priority rather than saving properties or belongings.

3.4. Outcomes of Decisions and Actions Following Flood-Related Threats

Outcomes of decisions and actions following a flood crisis situation refer to the results or consequences. It could be positive, negative, or both of the choices and steps taken by school leaders after a flood emergency has occurred. The decisions and actions made during and after flood-related threats have significant and lasting outcomes on the safety, recovery, and resilience of schools. Based on the thematic analysis, I have generated five emerging sub-themes. These are regular conduct of training and drills, coordination and collaboration with stakeholders, allocating funds for rehabilitation, review of the school contingency plan, and improving communication channels.

In the wake of flood-related threats, schools are often compelled to make critical decisions and take swift actions to protect lives, restore order, and build future resilience. The outcomes of these decisions and actions reflect how well schools adapt and respond to both immediate needs and long-term recovery. These outcomes may include increased awareness of vulnerabilities, revision of contingency plans, and the implementation of preventive and corrective measures that were previously overlooked.

3.4.1. Flooding necessitates regular conduct of training and drills.

When it comes to school preparedness, having a comprehensive and detailed disaster plan is a critical first step. This disaster plan also should be accompanied by adequate training, drills or practices, physical resources, and inter-agency cooperation (Alexander, 2015).

Atillo et al. (2025) emphasized the improvement of preparedness and optimization of available resources, strategic planning and community engagement are crucial. Proactive steps that promote readiness and lessen emergency mayhem include frequent exercises and well-defined evacuation procedures. In order to give stakeholders, the tools they need to effectively manage emergencies, schools must place a high priority on training and communication procedures.

Various forms of drills are conducted as proactive measures in preparing individuals or groups for emergencies that require coordinated action. Evacuation drills are a widely used method for preparing school communities to safely respond to natural disasters (Vasquez et al., 2018). This conduct of drills is relatively part of the school crisis or emergency plan as part of school preparedness for a crisis. Even though disasters are often inevitable, their severity can be lessened through preparedness. Educating communities and individuals on pre-disaster plans is important (Tabish & Syed, 2015).

3.4.2. Flooding enhances coordination and collaboration among stakeholders.

In times of flood crisis, one significant outcome of the decisions made by school administrators is the increased effort to coordinate and collaborate with stakeholders. This affirmed the studies of Marston et al. (2020) and Gilmore et al. (2020), who stated that community participation is vital in the collective response through their support in the spirit of volunteerism. This form of community engagement is considered an essential factor during outbreaks and is important to ensure that interventions are contextually appropriate.

As I listened to the participants, they revealed that it is important to collaborate with stakeholders. This finding affirmed the study of Buzkort et al. (2020), who emphasized that to endure challenges, it is essential to establish support networks, disseminate tools and knowledge, and actively listen to varying viewpoints. Hence, it is crucial to foster cooperation and trust among all parties involved and members of the school community in order to develop a positive school culture. (Chatzipanagiotou & Katsarou, 2023).

Similarly, Assefa and Zenebe (2024) emphasized the importance of collaborative efforts such as engaging families and communities, working together with guardians and parents, as well as partnering with local resources and organizations. These strengthen ties between the home and the school, promote cross-cultural understanding, and offer helpful assistance for a range of needs. These collaborations bring valuable resources from community organizations, contributing to shared goals. Meaningful parent involvement in decision-making is essential for positive student learning outcomes. By working together, parents, community leaders, and representatives can leverage community resources to strengthen school programs and support student development. Strategic planning meetings, academic clinics, PTA meetings, and open days provide valuable platforms for this collaborative work (Piliyesi et al., 2020).

3.4.3. Flooding prompts the allocation of funds for rehabilitation efforts.

One of the challenges faced during the crisis was the lack of adequate funding resources that hindered the implementation of a school crisis management plan, as demonstrated by material defects and human resource limitations (Chatzipanagiotou & Katsarou, 2023).

The participants shared that after the evaluation of damaged resources, the school needs to allocate funds for repairs and purchase damaged resources and supplies. This finding corroborated the study of Mir et al. (2025), who reiterated that schools in flood-prone areas are likely to be affected if no necessary arrangements are put in place since floods keep repeatedly happening. Since the education of students was highly affected, it is important to quantify the damage and loss due to recurring floods so that proper allocation and budgeting for rehabilitation can be done.

3.4.4. Flooding necessitates the review and updating of the school's contingency plan.

Crisis management involves not only controlling a situation but also finding solutions and resolving the problem. It means addressing challenges faced by individuals or organizations by anticipating potential issues and preparing for unexpected events.

As I listened to the participants' responses, the school contingency plan must address the recent needs of the school. This finding is consistent with the study of Chang et al. (2020) and Nelson (2019), who emphasized the significance for the school to establish a realistic and evidence-based emergency plan that

aligns with actual conditions. If the emergency plan is not successful, the school team needs to review the plan by conducting discussions that help enable school leaders to provide direction on how to effectively plan and prepare to manage critical incidents.

Moreover, the participants also reiterated that reviewing and revising this contingency plan takes a collaborative effort and needs the involvement of all stakeholders. This can be confirmed by the study of Khalidi et al. (2021), who pointed out that conducting crisis planning is an important part of strategic planning and forming a team of workers to face the crisis. The crisis planning team aims to mitigate school threats, though not all incidents can be prevented.

3.4.5. Flooding necessitates the enhancement of communication channels.

Effective communication holds enormous potential in reducing uncertainty. The participants revealed the importance of regular and constant communication. This finding affirmed the study of Chatzipanagiotou and Katsarou (2023) and MacDonald et al. (2022), who reiterated that establishing regular, transparent, two-way communication for information and collaboration within the school community is important. Information and communication channels facilitate information flow. When it comes to multi-stakeholder partnerships, it fosters positive relationships. Information and communication channels, such as websites, emails, workshops, networking events, and regular meetings, provide updates, enhance skills, encourage shared learning, and coordinate decision-making.

The participants further reiterated that establishing a communication channel makes information dissemination easy and fast. This finding corroborated the study of Grissom and Condon (2021), and Fotheringham et al. (2022), who emphasized that clear and consistent communication about the crisis, its resulting needs, and how partners can contribute is essential for mobilizing external support. Investing in communication systems, along with dedicated time and encouragement, promotes collaborative knowledge and policy sharing.

4. Future Directions

4.1. Implications for Practice

The findings of this study on crisis management in flood-prone public secondary schools highlight critical implications for improving school crisis preparedness, crisis response, and recovery. Schools may go beyond reactive measures and adopt proactive crisis management plans that include regular training, drills, and updated contingency protocols tailored to the unique challenges posed by flooding. The study also emphasizes the importance of stakeholders' collaboration, where local government units, disaster response agencies, and educational institutions work together in planning and execution. Strengthening communication channels, both internal and external, is crucial to avoid delays and confusion during emergencies. Moreover, school administrators may advocate for the allocation of resources, not only for post-flood rehabilitation but also for preventive infrastructure upgrades and the protection of critical records and learning materials.

4.2. Implications for Further Research

In the foregoing findings of my study, I look into future research that employs a quantitative design to investigate the correlations of the themes in my study. Likewise, to utilize these themes as variables, and the emerging sub-themes as indicators.

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