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The Impact of Business Continuity Planning on Institutional Risk Response: A Structural Equation Modeling Approach in State Universities in Bukidnon

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Abstract

Purpose: The purpose of the study is to investigate the impact of the Business Continuity Plan (BCP) on Institutional Risk Response Awareness and Effectiveness at the state universities in Bukidnon.

The design, methodology, and approach of the study: The data were collected from 72 individuals, including both faculty, staff, and students, who were the respondents of the study using a survey questionnaire distributed through Google Forms. The study utilized the Partial Least Squares – Structural Equation Modeling (PLS-SEM) using the WarpPLS 8.0 (Kock, 2020) to measure the direct and indirect or mediated relationships (Hair et al., 2021).

The Findings: The findings reveal a significant positive relationship between Business Continuity Plan (BCP) and Institutional Risk Response Awareness, which mediates the impact on Effectiveness. Identified gaps may include the inconsistent Business Continuity Plan (BCP) updates and limited training for unexpected disruptions or any organizational emergencies. The study also emphasized the importance of BCP and highlights the broader risks preparedness, such as territorial tensions, political instability, and potential national security challenges, to address not only the organizational emergencies but also the societal disruptions that may affect institutional operations.

Originality/value: The findings contribute to the ongoing discussion on academic resilience and emphasize the strategic significance of Business Continuity Plan (BCP) in higher education institutions to mitigate risks and to strengthen preparedness against potential organizational disruptions

Keywords: business continuity plan, institutional risk response awareness and effectiveness, academic performance, risk assessment

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1. INTRODUCTION

Educational institutions are affected by various disruptions in a rapidly changing and unpredictable environment that highly influences the operations. Effective risk response is highly promoted and regularly practiced, performing drills and strictly following the business continuity plan created in every institution to prevent unexpected disruptions and allow for quick decision-making and effective response in times of crisis. The Institutions need to be resilient to natural calamities such as earthquakes, fires, and floods, as well as pandemics, cyberattacks, and other emergencies. Research has shown that educational institutions, particularly in the disaster-prone areas, must integrate strategies or techniques such as Disaster Risk Reduction (DRR) education. This strategy is the practice of teaching people in the organization how to reduce the risk of disasters, also to protect the community and prepare for adverse events, and to improve resilience. Studies have demonstrated that integrating Ecosystem-based Disaster Risk Reduction (Eco-DRR) strategies into the curriculum significantly strengthens disaster preparedness among students, faculty, and staff (Pratiwi et al., 2023). Business Continuity Plan is a system of prevention and recovery from potential threats to a company, and it's not limited to educational institution but it is also utilized in different organizations to ensure that personnel and assets are protected and are able to function rapidly in the event of a disaster before, during and after (International Organization for Standardization [ISO], 2019).

Institutional risk response in this study helps to see how effectively faculty and staff can recognize, respond within the context of Business Continuity Plan (BCP), students also play a crucial role in the campus during emergencies, students contribute significantly by understanding and following emergency protocols and support the overall continuity efforts. The Institutional Risk Response Awareness and Institutional Risk Response Effectiveness are examined in this study as the key components of the resilience strategy of the state universities in Bukidnon that reflect the roles and responsibilities of the faculty and staff under the created Business Continuity Plan. To provide additional perspectives on the BCP's campus-wide impact, the variables specifically measure institutional response as the personnel in the organization have a primary accountability in executing continuity protocols. In particular, this research is done to see how the Business Continuity Plan (BCP) enhances institutional risk response at the state universities in Bukidnon.

Business Continuity Plan (BCP) comprises numerous strategies and procedures that ensure continuity of the most critical functions before, during, and after interruptions. This is dependent on faculty, staff, and students' knowledge about risks they are exposed to and their ability to deal with the emergencies, which is very important for business continuity. Research has shown that a Business Continuity Plan (BCP) plays an important role in reducing the impacts of disturbances on organizational activities. Similarly, barriers to effective crisis learning in SMEs (Small and Medium Enterprises), such as personal, organizational, and industry level challenges, emphasized the need for proactive strategies to improve organizational resilience (Kalutara Koralalage & Achchi Kankanamge, 2024). For example, Păunescu et al. (2018) emphasize the need for extensive impact analyses that

identify essential processes and enable adequate training of the workforce in case of emergencies.

In the case of higher education, integrating business continuity planning (BCP) into institutional frameworks is crucial for maintaining academic activities during crises. Insights from the tourism sector from barriers to learning from crisis, such as those provided by Kalutara Koralalage and Achchi Kankanamge (2024), this study emphasized that overcoming barriers to crisis learning, whether personal or organizational, is essential for effective disaster risk management across industries. An effective Business Continuity Plan (BCP), as highlighted by Phillips and Landahl (2020), is a key ingredient to enhancing an organization's resilience, and this extends to educational environments, where it ensures that operational and academic functions can continue uninterrupted.

In this study, state universities in Bukidnon were chosen as the primary focus because of the socio-economic infrastructural dynamics and geographic deficiencies. Bukidnon is a province in Northern Mindanao that is landlocked as well as mountainous in nature. It has a limited coping capacity and is prone to exposure to seismic hazards. The province has a Multi-Hazard Risk (MHR) score of 0.502, which is medium according to the Pacific Disaster Center (2021). This represents 'great' resilience and coping capacity (67th and 70th out of 84 provinces) and a low vulnerability level, marking it strategically relevant for assessing institutional preparedness and response during crises. These broader provincial challenges are reflected in the operational difficulties faced by local universities, including limited technological infrastructure, unstable internet connectivity, and frequent power outages. These issues were particularly exacerbated during the COVID-19 pandemic, which disrupted academic operations and necessitated the rapid shift to online and modular learning modalities (Gocotano et al., 2021). This prompted the need for Business Continuity Plans, which required incorporating blended learning systems, emergency communication device protocols, and backup plans for technology access. Such experiences make them ideal case studies for understanding the impact of BCP on institutional risk response.

This research analyses the effect of BCP implementation on risk response awareness and effectiveness on an institutional level across the different groups, which include faculty, staff, and students. Using a closed-ended survey methodology, it intends to measure the level of awareness, preparedness, and participation of these groups and how these elements affect the institutional systems to manage disruptions. This study focuses on the interplay of BCP functional roles with responses of various university actors during crises. The study looks at these aspects to demonstrate how BCP enhances organizational resilience and helps to ensure smooth operations in the higher education setting.

1.1 Objectives of the Study

The objective of this research is to assess the impact of Business Continuity Plan (BCP) on the institutional risk response system of state universities in Bukidnon. This study attempts to find out if BCPs have been successful in raising the level of awareness and improving the

responsiveness of the institutional members, including faculty, staff, and students, to various risks and disruptions.

Considering that students are impacted by academic continuity measures and actively contribute to the level of institutional preparedness, this study regards them as key constituents with respect to BCP assessment. Therefore, the research will look into the effect of BCP implementation on the professional and participatory roles across the university community during times of crisis.

This study is designed to achieve the following goals:

- Determine the impact of the Business Continuity Plan (BCP) on Institutional Risk Response Awareness;
- Evaluate the impact of the BCP on the response capability of faculty, staff, and students to institutional risks;
- Analyze the impact of the BCP on the participation of institutional stakeholders such as students during times of disruption.

1.2 Significance of the Study

The research study aims to boost the resilience of the state universities in Bukidnon against possible disruptions by assessing the effectiveness of the Business Continuity Plan (BCP) and thus ensuring academic continuity as well as maintaining educational services during crisis situations. It is expected that the findings of the study can help inform university administrators and policy makers about the strong points and weak points of the current BCPs. In connection, the study will benefit the following:

Students: This will help students to be more stable and enable them to secure a safe learning environment and to ensure continuity of quality education in the event of an emergency.

Faculty and staff: The study will help to enhance risk management as well as provide effective training, create effective preparedness programs to improve safety and readiness during a crisis.

University Administrators and Policy Makers: The study will help gain insights into the strengths and weaknesses of the current business continuity plan (BCP) of the state universities in Bukidnonwhich will provide recommendations for the best practices, develop the risk assessment and analysis, and . This will provide recommendations for the best practices, develop the risk assessment and analysis, business impact analysis, and mitigation plan to improve campus resilience and safety protocols.

University's Emergency Response Teams: The study will help the response team in times of emergencies in understanding further the roles and responsibilities within the framework of the business continuity plan (BCP) created by the institution or organization. This will allow proper coordination, communication, and effective response during a crisis.

Local Community and Emergency Services. The study will be able to benefit the community and serve as a whole resource in proper coordination with the local emergency response team during the regional crisis and emergencies.

Researchers and Academic Partners: The study will help gain new insights into the roles and responsibilities within the framework of the business continuity plan (BCP) in education that contribute to the literature on institutional resilience and risk management in education. The study will also benefit the stakeholders or partners of the institutions and create a strong relationship, collaborations, and community engagement towards stability and continuity. This knowledge can be used as a guide on how to improve risk management strategies and training for lecturers, staff, and other stakeholders within academia, hence creating an enabling environment for better learning. Lastly, this paper enhances understanding about business continuity in education, which may benefit other institutions with similar concerns, and shows how important it is to include such plans in risk management practices at schools. In short, while evaluating its value by determining its effectiveness regarding awareness levels among faculty and staff, it also highlights a need for improving institutional resilience via policies, so as to be part of the literature on academia.

1.3 Conceptual Framework

The conceptual framework provides a visual representation of relations that exist between important variables in the study, indicating the expected manner in which the Business Continuity Plan (BCP) influences. It indicates the expected manner in which the Business Continuity Plan (BCP) influences Institutional Risk Response Effectiveness, with the mediating variable Institutional Risk Response Awareness. The university's strategies, policies, and procedures make up the Business Continuity Plan (BCP) aimed at maintaining operational flow amid disruptions. The Institutional Risk Response Effectiveness is an index of how effective faculty and staff have been in responding to risks as well as applying Business Continuity Plan (BCP) measures during any type of interruptions or emergencies, with the mediating effect of Institutional Risk Response Awareness.

1.3.1 Contingency Theory

The contingency theory argues that the effectiveness of an organization comes as a result of fine alignment between the structure of an organization and its environment. As such, regarding Business Continuity Plan (BCP), the theory propounds that business continuity strategies are at their best when tailored against certain types of risks and disruptions to enhance the overall organizational resilience. The BCP strategies should be molded with the needs and risks of the university, thereby making its faculty and staff more aware and effective in their response to such risks. It is the general framework and theories that will underpin your research. It helps explain why and how the independent variable is going to affect the dependent variable.

According to Moniz (2010), the contingency theories are multifaceted and have many implications. The contingency theories in the management encyclopedia of management are

divided into two categories, and these are [1] Environmental contingencies and [2] Internal contingencies (Helms, 2000). The Environmental contingency theories emphasize the relative stability of the environment. Internal contingencies target factors like the size of an organization. The types of faculty and staff in an organization also come into play under the internal contingency model. The contingency theory asserts that organizations are open systems that are constantly interacting with the environment and adjusting to various environmental pressures. Organizational traits are created by the environment, market, and technology (Lawrence & Lorsch, 1973).

According to Contingency Theory, a leader's effectiveness is determined by how closely their style matches the context and relates to situational 'fit' and managerial flexibility.' Based on this theory, organizational effectiveness is determined by a firm's ability to address challenges from the external environment and the needs of internally embedded structures. For instance, state universities in Bukidnon have the Business Continuity Plan (BCP), which is a response to external crisis (natural disasters, cyberattacks) as well as internal (role of people, institution's scope). The study highlights that institutions strengthen their resilience by adopting contingency-based Business Continuity Planning (BCP), improving risk awareness and response. Mendy (2020) supports this, noting that contingency planning enhances organizational adaptability and responsiveness to complexities.

1.3.2 Risk Management Theory

The theory identifies, assesses, and mitigates risks to minimize their impact on the organization. It places great emphasis on the need for a structured approach in managing risks. The Business Continuity Plan (BCP) is a structured approach toward risk management, and its effectiveness is measurable by the degree of awareness among faculty and staff about the risk management strategies implemented. In the state universities in Bukidnon, it helps to identify, assess, and mitigate the risks since the Business Continuity Plan (BCP) serves as the structured framework of businesses or organizations.

The risk is a continuous process that involves four key steps, including risk identification, risk assessment, risk control, and risk monitoring. Each step in the cycle aligns with the Planning of Business Continuity in addressing risks, and it is not only managed but should be regularly reviewed and updated in order to adapt to the evolving challenges. Through examining workforce awareness and risk management strategies response, the study evaluates how effectively the Business Continuity Plan (BCP) fosters preparedness and resilience. Risk management theory helps the Business Continuity Plan (BCP) to be a significant framework for enhancing organizational readiness in the event of emergencies or disruptions.

A previous study by Boston Consulting Group (2023) highlights findings that companies with mature risk management systems emphasize strategic planning and data analytics to better navigate crises and maintain stability. The result of this study aligns with the Business Continuity Plan (BCP) that Forster enhances overall institutional risk response preparedness and minimizes operational disruptions towards Institutional Risk Response Effectiveness.

1.4 Statement of the Problem

The study aims to determine the effectiveness of the Business Continuity Plan (BCP) at the state universities in Bukidnon. Specifically, this study seeks to answer the following questions:

1. How does the Business Continuity Plan impact the Institutional Risk Response Awareness and Effectiveness at the state universities in Bukidnon?
2. Is there a significant relationship between Business Continuity Plan (BCP) and Institutional Risk Response Awareness?
3. Is there a significant relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness, with the Institutional Risk Response Awareness as a mediator?
4. Is there a significant relationship between Institutional Risk Response Awareness and Institutional Risk Response Effectiveness?

The following are the formulated Hypotheses of the study.

H1. There is a significant relationship between Business Continuity Plan (BCP) and Institutional Risk Response Awareness.

H2. There is a significant relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness, with Institutional Risk Response Awareness as a mediator.

H3. There is a significant relationship between Institutional Risk Response Awareness and Institutional Risk Response Effectiveness.

The hypothesized framework illustrates the relationship between Business Continuity Plan (BCP), Institutional Risk Response Awareness, and Institutional Risk Response Effectiveness, as shown in Figure 1.

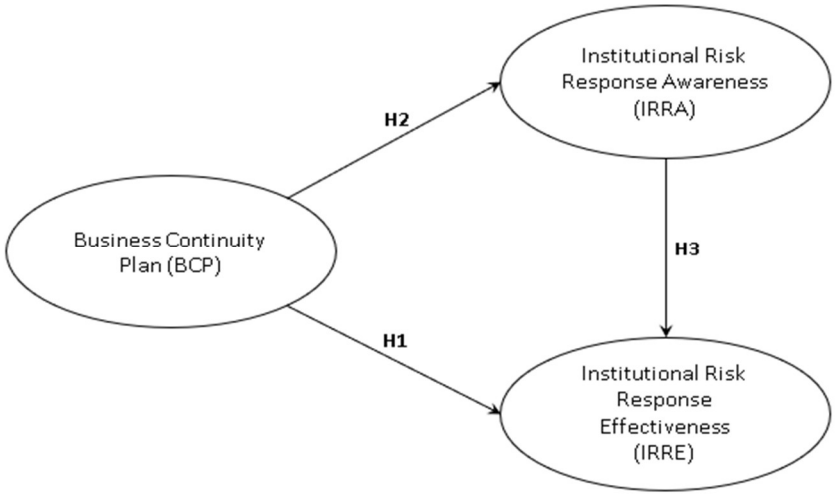

Figure 1. Hypothesized framework of the study

2. METHODOLOGY

2.1 Research Design

This study employs a quantitative research design using Structural Equation Modeling (SEM) to investigate the relationships between the Business Continuity Plan (BCP) and the Institutional Risk Response Awareness as a mediating variable and the Institutional Risk Response Effectiveness at the state universities in Bukidnon. The descriptive and correlational aspects of the design are utilized to systematically document the current state of the Business Continuity Plan (BCP) implementation of the state universities in Bukidnon and explore the relationships between the key variables. The Structural Equation Modeling (SEM) is utilized to assess these interactions and mediation. The Structural Equation Modeling (SEM) also allows the simultaneous analysis of complex or multiple relationships among the variables, testing the mediating effect of Institutional Risk Response Awareness, and it allows for the robust statistical validation of the proposed recommendation or framework. The research design is supported by the Structural Equation Modeling (SEM) since it is appropriate for this study due to its capability to analyze complex causal pathways and mediation effects. It is widely used in organizational and risk management research for examining the latent variables. The hypothesized model also incorporates the direct and indirect paths in testing the influence of Business Continuity Plan (BCP) on risk response awareness as a mediator and risk response effectiveness at the state universities in Bukidnon. Furthermore, the descriptive method provides insights into the existing practices of Business Continuity Plan (BCP) and institutional risk response, while the correlational method examines the strength and direction of the relationships among the variables and the mediation variable as well.

2.2 Participants of the Study

The respondents of the study were the students, faculty, and staff of the state universities in Bukidnon. A voluntary and convenient sampling technique was employed. The survey was made accessible to all the members of the state universities in Bukidnon and to all invited participants to respond with the questionnaire. The invitations were disseminated via online group chats, and the survey was distributed through an open Google Form distribution method. A total of 72 responses were collected, representing a diverse cross-section of the academic community.

The study not only primarily focused on faculty and staff, but students were included due to their active involvement in emergency drills and campus-wide institutional continuity measures. In the context of higher education institutions, students play a critical role in risk response, such as evacuation, adherence to safety protocols, and participation in continuity training. Therefore, their perspectives provide valuable insights into the operational effectiveness of BCP implementation. According to Izumi et al. (2021), student participation is essential in understanding institutional resilience, particularly in a large-scale disruption such as the COVID-19 pandemic, cyberattacks, power outages, and severe typhoons. While

this sampling method facilitated ease of data collection with an approved permission to conduct a survey, it is noted that participation was influenced by respondents' willingness and availability. The respondents of the study were informed of the study's purpose, a well-explained definition, confidentiality, and the relevance of the study, and the participation was entirely voluntary.

For instance, Rasiah et al. (2020) assessed university students' perceptions of academic continuity plans during the COVID-19 pandemic. Their findings revealed that student feedback was crucial for evaluating the effectiveness of these continuity plans, which highlights the students' role in fostering institutional resilience. The study found that the students' perspectives are vital for understanding and improving BCP strategies in higher education settings.

2.3 Population Sampling

A voluntary and convenience sampling method was used to identify the respondents of the study. The respondents must be bona fide students, faculty, and staff from a state university in Bukidnon. The convenience sampling was chosen due to the accessibility of the respondents and logical considerations that allow for the efficient data collection within the university. The sample size was determined using the GPower 3.1, which is a tool used to determine the minimum required sample size by inputting the appropriate statistical tool. The tool resulted in 74 sample size to achieve the power of 0.80 with a medium effect size, but the study successfully collected data from 72 respondents, and it is slightly short of the minimum sample size by two responses. The sampling method ensured inclusivity by distributing an open Google Form survey to all university members.

2.4 Data Analysis

The study used a quantitative approach with a predictive-correlational research design to examine the relationship between the Business Continuity Plan (BCP), Institutional Risk Response Awareness, and Effectiveness. A descriptive statistic was utilized to summarize and describe the demographic profile of the respondents using the frequencies, mean, and standard deviation, also to provide an overview of the collected data. Additionally, a Partial Least Squares – Structural Equation Modeling (PLS-SEM) using the WarpPLS 8.0 (Kock, 2020) software was used to estimate the parameters of the structural model. This method was used for its ability to handle complex models and latent variables while performing with smaller sample sizes (Hair et al., 2021). In the Partial Least Squares – Structural Equation Modeling (PLS-SEM), it involves the validity and reliability test through the indicators like composite reliability, Cronbach's alpha, which were calculated to assess the internal consistency and the average variance extracted (AVE) to measure the convergent validity. Average variance extracted (AVE) values surpassed the required threshold of 0.50, and the composite reliability and Cronbach's alpha values exceeded the required threshold of 0.70 (see Table 6). Discriminant validity was employed using the Heterotrait-Monotrait ratio

(HTMT ratio) to confirm the distinctiveness of the constructs of the study. The structural model was measured by using the path coefficient, p-values, standard errors, and effect sizes to examine both direct and indirect or mediating effects. A model fit and quality indices such as Average Path Coefficient (APC), Average R-Squared (ARS), Adjusted ARS (AARS), Tenenhaus Goodness-of-Fit, Average Variance Inflation Factor, and Factor Analysis were assessed to ensure the model's overall strength of validity and reliability. The structural model analysis also used the direct, indirect, and total effects to test the hypothesized relationships among the constructs. This comprehensive approach allowed for a thorough evaluation of mediation effects and causal pathways that help provide deeper insights into the relationship between the Business Continuity Plan (BCP) and the institutional outcomes.

2.5 Research Instrument

The survey instrument was adapted from established research questionnaires relevant to the context of Business Continuity Plans (BCPs) and risk response in organizational and educational settings (Maleki Vishkaei, B., & De Giovanni, P., 2024; Izumi et al., 2021). The constructs were modified to align with the unique context of the state universities, with particular attention to local BCP practices and terminology. The instrument was divided into three latent constructs: (1) BCP Awareness, (2) Institutional Risk Response Awareness, and (3) Institutional Risk Response Effectiveness. Additionally, two items measured the overall perceived impact of the BCP. The 5-point Likert scale was employed to measure the degree of agreement or disagreement and phrased to be applicable to both faculty, staff, and students. To ensure validity and reliability, the tool was subjected to thorough validation. Internal consistency was evaluated using Cronbach's Alpha (CA) and Composite Reliability (CR), both of which exceeded the recommended threshold of 0.70 for all constructs. Convergent validity was confirmed by Average Variance Extracted (AVE) values above 0.50, whereas discriminant validity was established using the Fornell-Larcker Criterion and Heterotrait-Monotrait (HTMT) ratio, which also confirmed that each construct was statistically distinct.

Furthermore, a Confirmatory Factor Analysis (CFA) was also conducted within the Partial Least Squares – Structural Equation Modeling (PLS-SEM) framework using WarpPLS 8.0 (Kock, 2020; Hair et al., 2021). All the factor loadings were above 0.70, which supports the convergent validity of the model. Domain experts in disaster risk reduction and business continuity validated the questionnaire content for conceptual clarity and contextual appropriateness.

The questionnaire was disseminated online through Google Forms, so the respondents could complete it conveniently and anonymously. The detailed and organized instructions were included in the questionnaire to ensure that the respondents understood the purpose, meaning, definition, and relevance of the study prior to answering the questions. In compliance with RA 10173 or the Data Privacy Act of 2012, the questionnaire included a statement to ensure the confidentiality and anonymity of the respondents. The participants were informed that their responses would be used solely for the purpose of research and handled with the utmost discretion.

2.6 Ethical Considerations

The informed consent of the participants was provided with clear information about the purpose of the study, procedures, and the right to withdraw at any time if the respondents felt uncomfortable about the questionnaires. Written informed consent was obtained from all the respondents of the study before they completed the survey. A Statement included in the questionnaire emphasized that participation was voluntary and the respondents could withdraw anytime. *The confidentiality* of the responses from respondents was strictly kept confidential. Identifiable information was removed to protect the respondents' privacy. The data was securely stored with the password-protected files and was only accessible to authorized persons. In compliance with RA 10173 or the Data Privacy Act of 2012, respondents were informed that the data would be used solely for the purpose of research and handled in strict confidentiality. The survey questionnaire was designed to be non-invasive and respectful to the respondents' time and perspectives.

3. RESULTS AND DISCUSSION

This section discusses the results obtained from the data analysis, focusing specifically on descriptive statistics and Partial Least Squares – Structural Equation Modeling (PLS-SEM) using the WarpPLS 8.0 (Kock, 2020) to estimate the parameters of the structural model (Hair et al., 2021). It also involves the validity and reliability test through the indicators like composite reliability, Cronbach's alpha, and the average variance extracted (AVE). The structural model is also used in the study to be measured by using path coefficients, p-values, standard errors, and effect sizes in order to examine both direct and indirect or mediating effects. A model fit and quality indices such as Average Path Coefficient (APC), Average R-Squared (ARS), Adjusted ARS (AARS), Tenenhaus Goodness-of-Fit, Average Variance Inflation Factor, and Factor Analysis are also used to ensure the model's strength of validity and reliability.

3.1 Descriptive Statistics

The mean score of demographic profile and the three constructs presented in the table, which are: [1] Business Continuity Plan (BCP), [2] Institutional Risk Response Awareness (IRRA), and [3] Institutional Risk Response Effectiveness (IRRE), were calculated to assess the overall levels. The results for each construct are further interpreted to provide a detailed understanding of the data results. The research study by Pratiwi et al. (2023) suggests that integrating the Disaster Risk Reduction (DRR) education in the institutional frameworks is essential for fostering resilience among educational institutions, which is similar to the resilience strategies in the business continuity plan (BCP) frameworks. The findings support that preparedness and knowledge among personnel strengthen institutional response, which supports the study's aim to assess BCP effectiveness.

Table 1 indicates that the respondents are made up of 36.1% males and 63.9% females, showing a majority of female participants. The majority of the respondents are students in the Bachelor of Science in Business Administration (BSBA) program (66.7%), followed by those in the Bachelor of Public Administration (BPA) program (23.6%). The remaining respondents are General Education (GE) faculty (6.9%) and administrative staff (2.8%).

Table 1. Demographic characteristics of respondents

Demographic Characteristics	Frequency	Percentage
Sex		
Male	26	36.1
Female	46	63.9
Total	**72**	**100**
Program		
Bachelor of Science in Business Administration	48	66.7
Bachelor of Public Administration	17	23.6
General Education Faculty	6	6.9
Administrative Staff	2	2.8
Total	**72**	**100**

Table 2 presents the descriptive statistics for Business Continuity Plan (BCP) awareness. Respondents' reports have a high level of awareness of the Business Continuity Plan (BCP) in the university, with mean scores between 3.82 and 3.94 and with a consistent interpretation of high across all items. This high level of awareness suggests a strong familiarity with the BCP, receives regular updates and training and has a clear understanding of individual roles within the plan. The overall mean score of 3.88 confirms a positive trend in awareness, effective dissemination of information, and engagement related to BCP.

Table 2. Descriptive statistics for Business Continuity Plan (BCP) awareness

Construct / Item	***N***	***Mean***	***Std. Deviation***	***Interpretation***
1. I am aware of the university's Business Continuity Plan (BCP)	*72*	*3.94*	*.918*	*High*
2. I receive regular updates or training regarding the BCP	*72*	*3.82*	*.909*	*High*
3. I understand my role and responsibilities in the BCP.	*72*	*3.89*	*.943*	*High*
Overall BCP Awareness	***72***	***3.88***	***.923***	***High***

Note(s): BCP = Business Continuity Plan

As shown in Table 3, Institutional Risk Response Awareness is rated consistently high, with mean scores from 4.01 to 4.13. The high overall mean score of 4.08 confirms that the faculty and staff feel confident in identifying risks, have enough understanding of risk management, and recognize the BCP's role in improving risk awareness. These results indicate that both faculty, staff, and students are highly aware of risk response responsibilities under the BCP in the university.

Table 3. Descriptive statistics for institutional risk response awareness

Construct / Item	*N*	*Mean*	*Std. Deviation*	*Interpretation*
1. The BCP has increased my awareness of potential risks that could affect the university.	72	4.11	.815	High
2. I feel confident in identifying risks associated with university operations due to the BCP.	72	4.01	.896	High
3. The BCP has been effective in improving my understanding of risk management strategies.	72	4.13	.887	High
Overall IRR Awareness	72	4.08	.866	High

Note(s): IRR = Institutional Risk Response

As shown in Table 4, the effectiveness of institutional risk responses is also rated high, with individual mean scores ranging from 4.03 to 4.13 and a high overall mean score of 4.07. These results indicate that the BCP has significantly enhanced faculty and staff's ability to handle risk in times of disruption, readiness to apply the BCP during disruptions, and capability to manage risks effectively through training and resources provided by the university. This consistent high rating reflects effective risk response practices among students, faculty, and staff.

Table 4. Descriptive statistics for institutional risk response effectiveness

Construct / Item	*N*	*Mean*	*Std. Deviation*	*Interpretation*
1. The BCP has improved my ability to respond effectively to risks.	72	4.13	.855	High
2. I feel well-prepared to implement the BCP during a risk event or disruption.	72	4.03	.822	High
3.The training and resources provided by the BCP have enhanced my effectiveness in managing risk situations.	72	4.06	.837	High
Overall IRR Effectiveness	**72**	**4.07**	**.838**	**High**

Note(s): IRR = Institutional Risk Response

Table 5 presents the overall impact of the BCP, which is rated high, with a mean of 4.18. The findings suggest that the BCP effectively enhances faculty and staff's risk response awareness while highlighting opportunities for further improvement to better support the efforts. This also suggests that the BCP significantly enhances Institutional Risk Response Awareness and effectiveness.

Table 5. Descriptive statistics for the overall impact of BCP

Construct / Item	*N*	*Mean*	*Std. Deviation*	*Interpretation*
1. The BCP has improved my ability to respond effectively to risks.	72	4.18	.845	High
2. I feel well-prepared to implement the BCP during a risk event or disruption.	72	4.18	.811	High
Overall Impact of BCP	**72**	**4.18**	**.828**	**High**

Note(s): BCP = Business Continuity Plan

3.2 Measurement Validity and Reliability

The reliability and validity of the measurement model were assessed through item loadings, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha (CA). For each construct, the Composite Reliability (CR) and Cronbach's Alpha (CA) values should exceed 0.70, and the Average Variance Extracted (AVE) should be greater than 0.50 (Fornell & Larcker, 1981; Nunnally, 1978; Nunnally & Bernstein, 1994; Kock, 2017; Kock & Lynn, 2012). These thresholds indicate strong construct validity, internal consistency, and reliability of the measurement model used in the study.

Table 6 shows the findings of the validity and reliability tests for the constructs employed in the study, which include Business Continuity Plan (BCP), Institutional Risk Response Awareness (IRRA), and Institutional Risk Response Effectiveness (IRRE). Each construct includes item loadings, average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha (CA).

The item loadings for the Business Continuity Plan range from 0.929 to 0.960, with an average value (AVE) of 0.893, Composite Reliability (CR) of 0.962, and Cronbach's Alpha (CA) of 0.940. These scores are above the suggested limits (AVE > 0.50, CR > 0.70, CA > 0.70), indicating an excellent internal consistency, reliability, and a strong convergent validity. The results indicate that the BCP constructs are strong and reliable, well-defined within the measurement model.

Table 6. Confirmatory Factor Analysis (CFA) shows the validity and reliability of constructs

Construct / Item	Item loading	AVE	CR	CA
Business Continuity Plan		0.893	0.962	0.940
BCP 1	0.929			
BCP 2	0.945			
BCP 3	0.960			
Institutional Risk Responses Awareness		0.908	0.967	0.949
IRRA1	0.938			
IRRA2	0.962			
IRRA3	0.959			
Institutional Risk Responses Effectiveness		0.904	0.966	0.947
IRRE1	0.966			
IRRE2	0.944			
IRRE3	0.943			

Note(s): BCP = Business Continuity Plan; IRRA = Institutional Risk Response Awareness; IRRE = Institutional Risk Response Effectiveness

The Institutional Risk Responses Awareness construct has item loadings ranging from 0.938 to 0.962, with an AVE of 0.908, CR of 0.967, and CA of 0.949. All values exceed the recommended thresholds (AVE > 0.50, CR > 0.70, CA > 0.70), indicating an excellent internal consistency, reliability, and a strong convergent validity.

Institutional Risk Responses. Effectiveness item loadings range from 0.943 to 0.966, with an AVE of 0.904, CR of 0.966, and CA of 0.947. All values exceed the recommended thresholds (AVE > 0.50, CR > 0.70, CA > 0.70), indicating an excellent internal consistency, reliability, and a strong convergent validity.

Overall, the findings show that all constructs, Business Continuity Plan (BCP), Institutional Risk Response Awareness (IRRA), and Institutional Risk Response Effectiveness (IRRE), exhibit excellent reliability and convergent validity. The results confirm that the measures used in the study are consistent, accurately reflect the constructs, and support the reliability of the hypotheses being tested in the study.

Table 7 presents the results of discriminant validity analysis using the Fornell and Larcker Criterion. The table displays the square roots of the Average Variance Extracted (AVE) coefficients on the diagonal and the correlation coefficients between constructs on the off-diagonal. The square root or the diagonal values of its AVE are Business Continuity Plan (BCP) is 0.945; Institutional Risk Response Awareness (IRRA) is 0.953; and Institutional Risk Response Effectiveness (IRRE) is 0.951. The table shows that the diagonal values are greater than the off-diagonal, therefore, there is discriminant validity.

Table 7. Discriminant validity using the Fornell and Larcker criterion
Square roots of AVE coefficients and correlation coefficients

	BCP	IRRA	IRRE
BCP	**0.945**		
IRRA	0.824	**0.953**	
IRRE	0.836	0.929	**0.951**

BCP = Business Continuity Plan; IRRA = Institutional Risk Response Awareness; IRRE = Institutional Risk Response Effectiveness. Diagonal elements are the square root of AVE of constructs, whereas the off-diagonal elements are the correlation between constructs.

3.3 Partial Least Squares (PLS)-Path Model

The structural model was assessed using Partial Least Squares (PLS). To check for discriminant validity, the Heterotrait-Monotrait (HTMT) ratios were calculated. As presented in Table 8, the HTMT value between Institutional Risk Response Awareness (IRRA) and Institutional Risk Response Effectiveness (IRRE) was 0.775, which is within the acceptable limit of less than 0.90 and therefore supports discriminant validity. In contrast, the HTMT value between the Business Continuity Plan (BCP) and IRRA was 1.017, which slightly exceeds the threshold. This indicates some overlap between BCP and IRRA, which may be due to the closeness of the items that measure these constructs. Although the model remains valid, this outcome points to the importance of refining the indicators in future studies to better separate awareness of continuity planning from awareness of risk responses.

After confirming discriminant validity, the hypothesized model was analyzed further. As shown in Figure 2, the framework illustrates the direct and mediated relationships among BCP, IRRA, and IRRE, along with the parameter estimates derived from the PLS analysis.

Table 8. Discriminant validity using HTMT ratio of correlations

	BCP	IRRA	IRRE
BCP	—	1.017	0.860
IRRA		—	0.775
IRRE			—

BCP = Business Continuity Plan; IRRA = Institutional Risk Response Awareness; IRRE = Institutional Risk Response Effectiveness. Values above 0.90 may indicate a lack of discriminant validity.

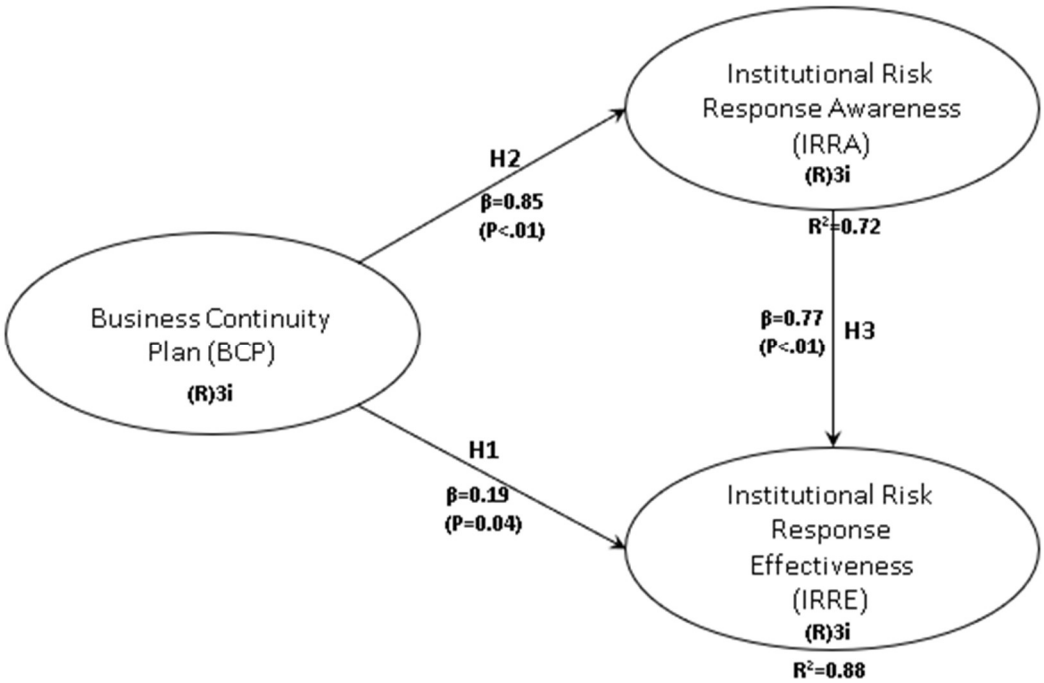

Figure 2. The structural model with parameter estimates

Table 9 shows that the parameter estimates for hypothesis testing (H1, H2, and H3) within the structural equation model have significant and positive relationships. The results show that the p=0.05 are all significant and the β coefficients are all positive; therefore, improvements of the Business Continuity Plan (BCP) lead to increases in Institutional Risk Response Effectiveness (IRRE) and Institutional Risk Response Awareness (IRRA). Similarly, enhanced Institutional Risk Response Awareness (IRRA) positively impacts Institutional Risk Response Effectiveness (IRRE).

Table 9. Parameter estimates for hypothesis testing in the Structural Equation Model

Hypotheses	*β*	*P-value*	*SE*	*f²*
H1. BCP → IRRE	0.193	0.043	0.111	0.164
H2. BCP → IRRA	0.848	<0.001	0.090	0.719
H3. IRRA → IRRE	0.766	<0.001	0.092	0.713

Note(s): BCP = Business Continuity Plan; IRRA = Institutional Risk Response Awareness; IRRE = Institutional Risk Response Effectiveness; f² is the effect size (Cohen, 1988) where 0.02 = small, 0.15 = medium, 0.35 = large

H1. Results show that Business Continuity Plan (BCP) has a positive and significant influence on Institutional Risk Response Effectiveness (IRRE) with a medium effect size (f^2=*0.164), β = 0.193, p = 0.43*.

H2. Results show that Business Continuity Plan (BCP) has a positive and significant influence on Institutional Risk Response Awareness (IRRA) with a large effect size (f^2=*0.719), β = 0.848, p<0.001*.

H3. Results show that Institutional Risk Response Awareness (IRRA) has a positive and significant influence on Institutional Risk Response Effectiveness (IRRE) with a large effect size (f^2=*0.713), β = 0.766, p<0.001*.

Overall, the hypotheses H1, H2, and H3 demonstrate a significant and positive effect, and the results highlight the significance of Business Continuity Plan (BCP) in fostering both the awareness and effectiveness in risk response. Table 10 shows that the indirect effect reveals that Business Continuity Plan (BCP) influences Institutional Risk Response Effectiveness (IRRE) through the mediation of Institutional Risk Response Awareness (IRRA); Effect sizes (f^2) indicate the practical significance of these effects, with direct effects ranging from medium (0.164) to large (0.719), and the indirect effect exhibiting a large effect size (0.513). These findings contribute to a comprehensive understanding of the relationships among the variables Business Continuity Plan (BCP), Institutional Risk Response Effectiveness (IRRE), and Institutional Risk Response Awareness (IRRA) as mediator.

Table 10. Direct and Indirect (Mediating) Effects in the Structural Equation Model
Path coefficients, p-values, standard errors, and effect sizes

Hypotheses	*β*	*P-value*	*SE*	f^2
H1. BCP → IRRE	0.193	0.043	0.111	0.164
H2. BCP → IRRA	0.848	<0.001	0.090	0.719
H3. IRRA → IRRE	0.766	<0.001	0.092	0.713
Indirect Effect				
H4. BCP → IRRA → IRRE	0.650	<0.001	0.008	0.513

Note(s): BCP = Business Continuity Plan; IRRA = Institutional Risk Response Awareness; IRRE = Institutional Risk Response Effectiveness; f^2 is the effect size (Cohen, 1988) where 0.02 = small, 0.15 = medium, 0.35 = large

H1. Medium effect size (f^2=*0.164*) indicates that the Business Continuity Plan (BCP) moderately influences Institutional Risk Response Effectiveness (IRRE).

H2. Large effect size (f^2=*0.719*) indicates that Business Continuity Plan (BCP) strongly influences Institutional Risk Response Awareness (IRRA)

H3. Large effect size (f^2=*0.713*) indicates that Institutional Risk Response Awareness (IRRA) strongly influences Institutional Risk Response Effectiveness (IRRE).

H4. The indirect effect of BCP – IRRA - IRRE results is significant (p<0.001) with a positive path coefficient (*β = 0.650).* This suggests that the improvements of Business

Continuity Plan (BCP) indirectly enhance Institutional Risk Response Effectiveness (IRRE) through Institutional Risk Response Awareness (IRRA) as a mediator. The indirect effect results show that the large effect size (f^2=*0.513*) indicates that Business Continuity Plan (BCP) confirms a strong indirect influence of Institutional Risk Response Awareness (IRRA) in bridging the relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness (IRRE), it helps to strengthen the overall impact of Business Continuity Plan (BCP).

Table 11 shows that the model fit indices indicate strong fit statistical significance for APC (0.602, $p < 0.001$), ARS (0.798, $p < 0.001$), and AARS (0.794, $p < 0.001$), emphasizing the model's capacity to explain variance while adjusting for the number of predictors. The AVIF (3.652) and AFVIF (6.475) values indicate acceptable levels of multicollinearity, which supports the reliability of the results. The Tenenhaus GoF (0.848) signifies a high goodness of fit between the model and it shows that it aligns well with the observed data, in support of the overall quality of the structural equation model.

Table 11. Model Fit and Quality Indices
APC, ARS, AARS, AVIF, AFVIF, Tenenhaus Goodness-of-fit

Model fit and Quality indices	Coefficients
APC	0.602, $p < 0.001$
ARS	0.798, $p < 0.001$
AARS	0.794, $p < 0.001$
AVIF	3.652
AFVIF	6.475
Tenenhaus GoF	0.848

APC – average path coefficient; ARS – average R-squared; AARS – average adjusted R-squared; AVIF – average block variance inflation factor; AFVIF – average full collinearity VIF; Tenenhaus GoF – Tenenhaus goodness of fit.

Based on the result, the structural integrity has been validated, showing that the hypothesized relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness (IRRE), with Institutional Risk Response Awareness (IRRA) as mediator. The results quantify how the improvements in BCP foster a greater IRRA and IRRE. This shows the significance of incorporating well-created Planning for business continuity in academic institutions to enhance both effectiveness and awareness in risk response in times of crisis or disruptions.

To further test the quality of the structural model, FCVIF, R^2, and Q^2 were also tested (Kock, 2015). As observed from Table 12, FCVIF values for all constructs were less than the conservative limit of 5.0, thus indicating no extreme multicollinearity or common method bias issue. In particular, BCP had FCVIF at 4.624, IRRA at 3.516, while IRRE had 2.203, all within acceptable limits.

R^2 for Institutional Risk Response Awareness (IRRA) was 0.754 and reveals that the model accounts for around 75.4% variance in IRRA. That is a good explanatory power (Hair et al., 2019). The R^2 for Institutional Risk Response Effectiveness (IRRE) was 0.605 and

reveals a high explanatory capacity. These results suggest that the Business Continuity Plan (BCP), along with IRRA as a mediator, significantly contributes to the variance in risk response outcomes.

Regarding predictive relevance, Q^2 values for IRRA were 0.748 and for IRRE were 0.603. As all the Q^2 values were positive, the model illustrates high predictive fit for both endogenous constructs (Hair et al., 2019). The findings confirm that the model possesses good predictive validity and explanatory power.

Table 12. Full Collinearity Variance Inflation Factor (FCVIF), Coefficient of Determination (R2), and Predictive Validity (Q2)

Constructs	Full Collinearity VIF	R^2	Q^2
BCP	4.624		
IRRA	3.516	0.754	0.748
IRRE	2.203	0.605	0.603

BCP = Business Continuity Plan; IRRA = Institutional Risk Response Awareness; IRRE = Institutional Risk Response Effectiveness.

4. DISCUSSION

The results of the structural equation modeling revealed that Business Continuity Plan (BCP) awareness has a significant positive effect on both Institutional Risk Response Awareness and effectiveness. This implies that when faculty, staff, and students are well-informed about the institutional continuity plans, they are more likely to identify risks and respond efficiently and effectively during unexpected disruptions. The statistical relationship validates the assumption that organizational preparedness, as embedded in a well-communicated BCP, leads to higher institutional resilience.

In the context of the studied state universities in Bukidnon, this association may be attributed to initiatives such as regular fire and earthquake drills, orientation activities on disaster response procedures, and the use of modular and online learning delivery modes during the COVID-19 pandemic crisis. These initiatives enabled both faculty and staff and students to internalize roles and protocols critical to continuity efforts.

Prior studies similarly affirm the role of awareness in fostering effective risk responses. For instance, Izumi et al. (2021) emphasized that awareness and training in higher education institutions are vital for enhancing preparedness and organizational resilience during crises. Similarly, Maleki Vishkaei and De Giovanni (2024) found that continuity knowledge and training significantly influence the ability of the institutional workforce to manage disruptions effectively. These results support the findings of the current study and reinforce the need for integrated collaboration in continuity planning that includes all campus stakeholders.

The findings of the study confirm that the Business Continuity Plan (BCP) is a vital document or management plan in enhancing the risk response capabilities within organizations or institutions. According to Ruighaver & Soni (2012), it is important in the Business Continuity Plan (BCP) to maintain operational effectiveness during the unexpected disruptions. The study further demonstrates that organizational awareness and preparedness for risk lead to more effective responses in times of crisis (Hagerfors et al., 2010).

Given that 74.9% of respondents were students, their inclusion is justified due to their active participation in university continuity measures and direct exposure to institutional disruptions. Their responses provide meaningful insights into how well the BCP is communicated, understood, and perceived across the campus. However, the results may reflect a student-learning perspective, and future studies should consider a more balanced sample that includes a distinct group of people.

The findings of the study highlight the importance of continuous all-out training and awareness programs to strengthen institutional risk response capabilities (Karim, 2016; Miller & Engemann, 2019). Planning and initiatives can significantly enhance institutional risk response preparedness and ensure that personnel are well equipped to handle risk effectively during crises. According to Conlon & Smith (2010), organizations must not only create a plan once but also regularly update and test their business continuity plans to improve resilience and lessen interruption in times of critical organizational disruptions.

Hence, the study also acknowledges limitations in its scope, since it is primarily focusing on the relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness with a mediating effect of Institutional Risk Response Awareness. Suggestion for future research must consider and explore other organizational factors, such as leadership support, workforce engagement, and involvement. Future research must consider and explore other organizational factors, such as leadership support, workforce engagement, involvement, and availability of resources that may influence the effectiveness of Planning for business continuity. As indicated by the study of (Goyal & Babel, 2015), it would be valuable to explore the lasting impacts of sustainable Business Continuity Plan (BCP) practices on the overall organizational performance and recovery times.

5. CONCLUSION

The result of the study reveals that the Business Continuity Plan (BCP) significantly impacts the Institutional Risk Response Awareness and Effectiveness. The study further demonstrates that organizational awareness and preparedness for risk lead to more effective responses in times of crisis.

The findings confirm that the BCP plays a critical role in boosting institutional preparedness and performance in managing risks. Future research could explore the specific

elements of the BCP that contribute to these improvements and assess the long-term effects of ongoing updates to the plan on institutional performance.

5.1 Findings Summary

The findings of this study indicate a significant relationship between the Business Continuity Plan (BCP) and the Institutional Risk Response Awareness and Effectiveness of the Academic Continuity Plan in the University. The statistical analyses suggest that a well-structured Business Continuity Plan (BCP) can enhance the performance of academic continuity measures, thereby ensuring that educational objectives are met even in times of disruption.

5.2 Implications for Practice

The results emphasize the importance of developing and maintaining a strong Business Continuity Plan (BCP) within educational institutions. By prioritizing business continuity, universities can better prepare for unpredictable challenges such as natural disasters, pandemics, disruptions caused by geopolitical tensions, and other external threats. This kind of preparedness is enabled to make sure that academic activities still function smoothly despite internal and external uncertainties. While the barriers to crisis learning in SMEs (Small and Medium Enterprises) have been extensively documented (Kalutara Koralalage & Achchi Kankanamge, 2024), this study finds similar issues in the higher education sector, particularly in the inconsistent BCP (Business Continuity Plan) updates and training limitations. These similarities emphasize the need for customized interventions to enhance institutional resilience. Pratiwi et al. (2023) highlight that integrating the disaster risk reduction strategies in educational settings can significantly enhance organizational resilience, which also supports the significance of continuous improvement or updating the content of the Business Continuity Plan (BCP) of the organization.

5.3 Recommendations for Institutions

Mandatory Training and Awareness: Regular Business Continuity Plan training and orientation integration need to become an integral part of organizational readiness.

Regular Drills and Simulations: Conducting periodic emergency response enhances preparedness considerably and enhances decision-making during emergencies.

Leadership Commitment: Institutional leaders must take active roles in advocating and facilitating the implementation of BCP.

Regular Updates & Evaluations: BCPs should be regularly reviewed and updated to stay responsive to new threats.

BCP Incorporation in Daily Operations: Incorporation of continuity planning into daily institutional operations ensures long-term resilience.

5.4 Future Research Directions

Leadership Support: More research is needed into how leadership dynamics influence the success of BCP.

Availability of Resources: Future research can explore how human, technological, and financial resources influence BCP adoption and effectiveness.

Stakeholder Perspectives: Research that looks at the views of faculty, students, and administrative personnel could come closer to determining the effectiveness of BCP.

Long-Term Impacts of BCP: Analyzing the lasting institutional impacts of effective continuity planning could enhance resilience models.

Flexibility to External Threats: Examining how institutions adapt BCP plans in response to global threats such as pandemics, cyber-attacks, and geopolitical tensions would broaden the scope of BCP research.

Furthermore, this research contributes to scholarly development by demonstrating how Structural Equation Modeling (SEM) can significantly apply to institutional relationships. It also serves as a guide for academic writing and publishing in the field of organizational resilience. Though the research focuses on state universities in Bukidnon, the results have broader relevance for institutions worldwide, particularly those seeking to enhance their risk preparedness and continuity planning.

5.5 Hypotheses Testing Results and Decisions

The results show a significant positive relationship between Business Continuity Plan (BCP) and Institutional Risk Response Awareness (IRRA), with a beta coefficient ($\beta = 0.193$, $p<0.001$) and a large effect size ($f^2=0.719$). Hypothesis 1 is accepted:

H1. There is a significant relationship between Business Continuity Plan (BCP) and Institutional Risk Response Awareness (IRRA).

The direct effect results show a significant positive relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness (IRRE) with a beta coefficient ($\beta = 0.193$, p-0.043) with a medium effect size ($f^2=0.164$). The Indirect effect of BCP – IRRA - IRRE results show a significant positive relationship with a beta coefficient ($\beta = 0.650$, $p<0.001$) with a large effect size ($f^2=0.513$). Hypothesis 2 is accepted:

H2. There is a significant relationship between Business Continuity Plan (BCP) and Institutional Risk Response Effectiveness (IRRE), with Institutional Risk Response Awareness (IRRA) as a mediator.

The results show a significant positive relationship between Institutional Risk Response Awareness (IRRA) and Institutional Risk Response Effectiveness (IRRE) with a beta coefficient ($\beta = 0.766$, $p<0.001$) with a large effect size ($f^2=0.713$). Hypothesis 3 is accepted:

H3. There is a significant relationship between Institutional Risk Response Awareness (IRRA) and Institutional Risk Response Effectiveness (IRRE).

The results suggest the importance of implementing and continuously improving the Business Continuity Plan (BCP) to enhance the institutional preparedness and risk response effectiveness. The research study contributes to the importance of understanding how the Business Continuity Plan (BCP) influences organizational resilience and offers valuable insights for institutions to strengthen their risk management frameworks.

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Appendix A

8/9/24, 11:47 PM Gmail - Request for Permission to Access and Cite Research Study and Adopt Research Instruments

Gmail

Delegencia Jovert J. <delegenciajovert20@gmail.com>

Request for Permission to Access and Cite Research Study and Adopt Research Instruments

1 message

Jovert Delegencia <delegenciajovert20@gmail.com> Fri, Jul 26, 2024 at 12:01 AM
To: shaw@sfc.keio.ac.jp

To: Rajib Shaw
Graduate School of Media and Governance
Keio University, Yokohama, Japan

Dear Sir/Mr. Rajib Shaw,

Greetings!

I am Jovert J. Delegencia, currently pursuing a Doctor of Philosophy in Business Administration at the University of the Visayas in Cebu, Philippines. I am also a full-time college instructor at Bukidnon State University - Impasugong Campus. I am reaching out to you regarding your research study entitled ***"Managing and responding to pandemics in higher educational institutions: initial learning from COVID-19"***.

In line with my academic activities, I am requesting permission to reference your research paper and possibly adopt your research instruments or questionnaires if you allow me to access your questionnaires as tools for my research study. One of the requirements of my PhD journey is to study publishable research, and after reviewing your research, I discovered that it is quite relevant to my desired study which is about the Business Continuity Plan. Rest assured, I will include you as one of the references in my research and accept the full responsibility and liability in my end.

Thank you for considering my request.

Sincerely,

JOVERT J. DELEGENCIA, MBA
College Instructor
Bukidnon State University - Impasugong Campus
BS in Business Administration
delegenciajovert20@gmail.com

INFORMED CONSENT

I am being asked to participate in a research study on ***The Impact of Business Continuity Planning on Institutional Risk Response: A Structural Equation Modeling Approach in State Universities in Bukidnon***. Participation involves completing a brief survey (5–10 minutes) online or at my convenience. No identifying information will be collected, and all responses will remain confidential.

There are no anticipated risks or compensation for participating. The study aims to benefit the Higher Educational Institutions, community, and society by providing insights into the impact of business continuity planning on institutional risk response.

Participation is voluntary, and I can withdraw at any time without consequences. For questions or concerns, I can contact the researcher at +639262911137 or jovertdelegencia@buksu.edu.ph.

By signing below, I acknowledge that I have read, understood, and agree to participate in this study. I will be given a copy of this signed consent form.

_____ _____

Signature of Informant/Date **Signature of Witness/Date**

_____

Signature of Researcher/Date

Appendix B

RESEARCH INSTRUMENT

THE IMPACT OF BUSINESS CONTINUITY PLANNING ON INSTITUTIONAL RISK RESPONSE: A STRUCTURAL EQUATION MODELING APPROACH IN STATE UNIVERSITIES IN BUKIDNON

Dear Participants!

I would like to ask for your participation in a survey for my research study entitled " The Impact of Business Continuity Planning on Institutional Risk Response: A Structural Equation Modeling Approach in State Universities in Bukidnon". Your input would be greatly appreciated and will help in understanding the effects of the BCP in the institution.

This survey aims to understand how the Business Continuity Plan (BCP) at State Universities in Bukidnon has impacted institutional awareness of potential risks and institutional effectiveness in responding to unexpected risks. Business Continuity Plan or BCP is a plan to keep the university running smoothly even during disruptions such as the COVID-19 pandemic, cyberattacks, power outages, or severe typhoons.

Note: This survey is part of the researcher's PhD subject requirement at the University of the Visayas. Participation is requested solely for academic purposes and for the benefit of our society, particularly Bukidnon, Philippines.

In accordance with RA 10173 or the Data Privacy Act of 2012, all personal and/or sensitive information solicited and disclosed from this questionnaire shall be used only for the study alone. Rest assured that your responses in this instrument will be kept confidential.

Sincerely yours,

Jovert J. Delegencia
Researcher, University of the Visayas

PART I. BUSINESS CONTINUITY PLAN (BCP) AWARENESS

Instructions: Please read & understand each item carefully and check the item that corresponds your answer as honest as possible.

Please check the box according to your choice.

5 – Strongly Agree 3 – Neutral 1 – Strongly Disagree
4 – Agree3 2 – Disagree

Please rate your agreement with the statements provided on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

BUSINESS CONTINUITY PLAN (BCP) AWARENESS					
ITEMS	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1. I am aware of the university's Business Continuity Plan (BCP)	☐	☐	☐	☐	☐
2. I receive regular updates or training regarding the BCP.	☐	☐	☐	☐	☐
3. I understand my role and responsibilities in the BCP.	☐	☐	☐	☐	☐

PART II. INSTITUTIONAL RISK RESPONSE AWARENESS

INSTITUTIONAL RISK RESPONSE AWARENESS					
ITEMS	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1. The BCP has increased my awareness of potential risks that could affect the university.	☐	☐	☐	☐	☐
2. I feel confident in identifying risks associated with university operations due to the BCP.	☐	☐	☐	☐	☐
3. The BCP has been effective in improving my understanding of risk management strategies.	☐	☐	☐	☐	☐

PART III. INSTITUTIONAL RISK RESPONSE EFFECTIVENESS

INSTITUTIONAL RISK RESPONSE EFFECTIVENESS					
ITEMS	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1. The BCP has improved my ability to respond effectively to risks.	☐	☐	☐	☐	☐
2. I feel well-prepared to implement the BCP during a risk event or disruption.	☐	☐	☐	☐	☐
3. The training and resources provided by the BCP have enhanced my effectiveness in managing risk situations.	☐	☐	☐	☐	☐
4. Overall, the BCP has had a positive impact on my awareness and effectiveness in responding to risks.	☐	☐	☐	☐	☐
5. I would recommend improvements to the BCP to better support Institutional Risk Response Awareness and effectiveness.	☐	☐	☐	☐	☐

This questionnaire was adapted from the studies of Maleki Vishkaei and De Giovanni (2024) and Izumi et al. (2021) and modified to suit the context of state universities in Bukidnon. The instrument was designed to measure three key constructs of this study: Business Continuity Plan (BCP) Awareness, Institutional Risk Response Awareness, and Institutional Risk Response Effectiveness.

Thank you for completing this survey!