


Exploring Sustainable Business Strategies for Climate Resilience Among Selected Small and Medium-Sized Enterprises in the Philippines: A Basis for Business Risk Management Framework

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Abstract

This research explores sustainable and innovative business strategies of selected businesses in Bulacan Province, focusing on risk management. Its objective is to develop a comprehensive framework and to help businesses navigate climate challenges while ensuring market survival, anchored on the Expanded 6Ps Model of Corporate Social Sustainability.

Through in-depth interviews with stakeholders, the researcher collected data and analyzed it using NVivo, a qualitative data analysis software, and thematic analysis. The study reveals that small and medium-sized construction businesses in Bulacan face significant profitability challenges due to climate-related risks, such as disaster-triggered disruptions and supply losses. In response, these SMEs have developed adaptive strategies, including lean operational models, disaster planning, tactical warehousing, and product innovation to maintain competitiveness.

Stakeholders, including owners, consumers, and local government personnel, recognize that strategic sustainable practices centered on legality and responsibility foster clean and well-managed operations. The study further indicates that sustainable business strategies create meaningful impacts across the dimensions of people, planet, profit, purpose, partnership, and policy. The proposed business risk management framework emphasizes safety and dignity as humanitarian principles, promotes environmental accountability through eco-centric practices, and advocates for ethical profit strategies to support community-driven growth. Ultimately, it calls for stronger enforcement and governance, positioning the framework as a roadmap for ethical, resilient, and climate-resilient business conduct.

Keywords: *sustainability, profitability, market competitiveness, climate risks*

INTRODUCTION

The Philippines ranks as the third-highest nation for disaster risk, with 60% of its geographical area exposed to various dangers (UNDRR, 2019). The situation can be owed to its position (Bollettino et al., 2018). Unfortunately, disasters negatively impact businesses by jeopardizing funding, logistics, market access, and labor (Ballesteros and Domingo, 2020).

Due to typhoons, the country could lose \$3.5 billion annually (Signer & Poulter, 2021). Specifically, the destruction of production can affect the supply chain (Chang et al., 2022). Yet, climate change will increase extreme weather events (UNDRR, 2019b). However, lack of risk-management systems makes SMEs vulnerable to disasters (Asia Pacific Alliance Philippines, 2023).

Further, according to Buganová et al. (2023), SMEs should be assessed for climate resilience, profitability, risk management, and market competitiveness in the face of calamities and climate change. Virglerova et al. (2021) said that SMEs require competitive advantages and risk management to be profitable.

Moving forward, Bulacan is poised to become a major economic force as investments target key areas north of the capital for development (Alviar, 2022). Bulacan is one of the locales with the highest concentration of SMEs in Central Luzon. Some initiatives provide monthly training for SMEs, enhancing their inspiration to advance their endeavors (Balbin, 2018).

However, Balita (2022) revealed that in 2018, around 46.4 percent of the area in Bulacan, Philippines, was susceptible to ground shaking due to the potential occurrence of an earthquake. Also, the province ranks among the ten most populated provinces in the country, with a total population of over 3.3 million. Also, Agbay et al. (2023) revealed that Bulacan's Provincial Development and Physical Framework Plan indicates that 31.85% of its municipalities are susceptible to flooding and have high vulnerability to rain-triggered landslides. Thus, residents would be impacted during extreme rainfall. However, SMEs may lack sufficient funds to endure downtime or substantial supply loss (Boudreau, 2023).

Natural disasters combined with climate change accentuate the already existing economic weaknesses of the country. SMEs, especially in high-risk locales like the province of Bulacan, are greatly impacted by the limited availability of resilience solutions. Thus, the study focused on improving profitability, risk management, and market competitiveness. Also, the study concentrated on enhancing profitability, polishing risk management techniques, and maintaining market competitiveness by means of a comprehensive framework establishment and advancement. Specifically, it will focus on SMEs in the construction industry across selected towns in Bulacan Province, such as Bustos, Baliwag, Angat, San Rafael, and Pandi.

Statement of the Problem

This study fundamentally aimed to explore sustainable and innovative business strategies of selected businesses in Bulacan Province. Additionally, this study aims to develop a comprehensive framework for businesses as they strive to navigate climate challenges while maintaining their market survival.

Specifically, the researcher aimed to garner sufficient data, knowledge, and observations to address the following research questions:

1. What is the impact of business-threatening climate-related risks on the profitability of small and medium-sized construction businesses in Bulacan Province?

2. What are the sustainable business strategies that were proven effective in enhancing climate resilience while maintaining or improving profitability and market competitiveness in Bulacan Province?
3. How do the stakeholders perceive the importance of implementing strategic business strategies in terms of their impact on the environment?
4. How do the stakeholders perceive the importance of implementing strategic business strategies in terms of their impact on the following: People, Planet, Profit, Purpose, Partnership, and Policy?
5. Based on the findings, what comprehensive business risk management framework can be proposed?

METHODOLOGY

The study utilized qualitative research, a multiple-case study, and a grounded theory research design, which is to achieve its objectives, focusing on the collection of non-numerical data that characterizes and describes phenomena. This design allowed the researcher to conduct in-depth interviews and analyze the data and integrate theoretical lens for developing comprehensive climate resilience framework for SMEs in Bulacan Province.

Due to the specific qualities required for participant inclusion, the researcher will choose a purposive sampling method. The study would include fifteen (15) owners and managers of SMEs operating in Bulacan Province during the research period, fifteen (15) consumers, and five (5) local government (PRRMDO/MDRMMO/CDRMMO) personnel. These participants were interviewed using a researcher-made research instrument, a series of open-ended questions designed to generate insightful and candid comments regarding their experiences and challenges. It was ensured to be validated, and its reliability was also determined.

The researcher gathered necessary consent and approval to conduct the study, strictly adhering to ethical standards for research. A pilot testing was also done to ensure that the instrument will be able to capture the desired responses. During the actual data gathering, the researcher briefed the participants, including their rights and other instructions for the interview. The participants were allowed to respond in either Tagalog or English. Upon the interview's conclusion, a detailed summary of the discussions was given, along with appreciation to the participants.

Moreover, thematic analysis was used as the qualitative data analysis tool, and the coding process was undertaken using NVivo software. All information obtained for research purposes was securely stored, following the Data Privacy Act of 2012.

RESULTS AND DISCUSSIONS

The findings revealed that small and medium-sized construction businesses in Bulacan Province face significant profitability challenges due to climate-related risks. Disaster-triggered business disruptions, such as floods and typhoons, often force temporary store closures, delay construction activities, and hamper access to job sites, thereby weakening service reliability and entrepreneurial momentum. Moreover, weather-damaged materials such as wet cement and rusted steel are often discarded or sold at a lower price, leading to unrecoverable inventory losses and added financial strain. The urgency to protect supplies during disasters often results in rushed safeguards, intensifying product waste and pursuing profit margins. Also, retail hardware stores suffer from direct physical damage, forcing repeated store closures and costly repairs that that emotional and financial stress. These businesses consistently struggle to start operational amid intensified climate risks and conditions. Additionally, safety risks during extreme weather, unstable work

sites, and electrical hazards, prompt owners to suspend operations to protect workers, sacrificing income to uphold responsibility.

Moreover, construction-related SMEs in the locale have developed adaptive strategies to navigate climate-related risks while maintaining profitability and competitiveness. By implementing lean operational models, such as cutting store hours, understocking vulnerable materials, and preemptively closing during disasters, owners reduce overhead costs while protecting business continuity. Also, disaster planning is deeply integrated into their operations, with proactive maintenance checks, elevated structural foundations, and early stockpiling that foster their resilience against floods and typhoons. Meanwhile, tactical warehousing also plays a vital role, considering that some of the SMEs upgrade their facilities with elevated floors and efficient layouts to protect inventory and streamline dispatch during emergencies. Clear communication with stakeholders also ensures aligned expectations and maintains trust, allowing uninterrupted operations before and after a disaster. Additionally, product innovation, particularly the reuse of offcuts, demonstrates creativity and environmental stewardship, considering that this strategy reduces waste while fueling sustainable production.

Further, stakeholders in Bulacan's construction-related SMEs recognize that strategic and sustainable business practices centered on legality and responsibility are essential for environmental stewardship. The owners ensure ethical resource extraction by securing permits and supplying certified, non-toxic products. Also, consumers appreciate the clean and well-managed stores as a sign of environmental care. Though permitting involves added steps and costs, local officials view them as vital safeguards rather than bureaucratic delays. These processes help identify potential ecological risks and promote transparency.

In addition, the participants recognized that sustainable business strategies create meaningful impact across the dimensions of people, planet, profit, purpose, partnership, and policy. Safety and dignity are prioritized by adjusting operations during disasters to protect employees' safety. Eco-centric accountability was also upheld through legal compliance and the use of legitimate materials, reducing hazards to the environmental. Resilience investments are also perceived to be costly but necessary, yielding long-term profit and sustainability. Also, purpose-driven initiatives, such as post-disaster aid and ethical sourcing, build trust and consumer loyalty. Meanwhile, strategic partnerships among SMEs, LGUs, and suppliers foster mutual support and shared resilience during a crisis. However, gaps in governance, such as weak enforcement and superficial compliance, undermine safety efforts and raise concerns.

BUSINESS RISK MANAGEMENT FRAMEWORK FOR CONSTRUCTION-RELATED SMES IN BULACAN PROVINCE			
DIMENSION	THEME/ VALUE	STRATEGIC BUSINESS IMPACT	STAKEHOLDER-DRIVEN OUTCOMES
PEOPLE	<ul style="list-style-type: none"> • Safety • Dignity 	<ul style="list-style-type: none"> • Prioritizing business impact • Humane treatment • Inclusive support systems 	<ul style="list-style-type: none"> • Enhanced social equity • Resilience in vulnerable groups in the community
PLANET	<ul style="list-style-type: none"> • Accountability • Eco-centric Practice 	<ul style="list-style-type: none"> • Implementing sustainable sourcing • Ethical waste management • Disaster-conscious store & warehouse 	<ul style="list-style-type: none"> • Promotion of environmental stewardship • Climate resilience
PROFIT	<ul style="list-style-type: none"> • Balanced Economic Returns 	<ul style="list-style-type: none"> • Aligning profitability with ethical behavior • Transparent operations • Community investment 	<ul style="list-style-type: none"> • Long-term market survival • Trust-based consumer loyalty • Repeat business or client retention
PURPOSE	<ul style="list-style-type: none"> • Civic and Moral Obligations 	<ul style="list-style-type: none"> • Embedding empathy and social responsibility into business goals and post-crisis responses 	<ul style="list-style-type: none"> • Mission-aligned initiatives that deepen societal relevance
PARTNERSHIP	<ul style="list-style-type: none"> • Solidary amidst Crisis 	<ul style="list-style-type: none"> • Building collaborative networks among LGUs, suppliers, and consumers in times of climate-related disruptions 	<ul style="list-style-type: none"> • Empathic collaboration • Stronger relational capital
POLICY	<ul style="list-style-type: none"> • Gaps in Policy and Governance 	<ul style="list-style-type: none"> • Advocating for stronger compliance, proactive governance, and effective disaster protocols 	<ul style="list-style-type: none"> • Strengthened regulatory engagement • Ethical and legal oversight

In line with this, the proposed business risk management considered these findings and further emphasized the dimensions mentioned above. The framework prioritizes safety and dignity as a humanitarian principle, fostering trust and resilience. Also, eco-centric practices ensure environmental accountability, while ethical profit strategies profit long-term community-driven growth. Ultimately, it calls for stronger enforcement and governance, making the framework a roadmap for ethical, resilient, and climate-resilient business conduct.

Conclusions

Based on the research findings, the following are concluded:

1. It can be concluded that climate-related disruptions impact the profitability in construction-related SMEs, which are vulnerable to environmental volatility. Also, it can be concluded that resilience must be financially integrated into business planning, not as a reactive expense. Risk exposure from disasters also challenges the stability of informal safeguards and exposes ethical tensions when safety decisions affect financial survival.
2. Adaptive strategies undertaken by the SMEs have demonstrated innovation and preparedness as key to turning climate adversities into a competitive advantage. The strategies show that local entrepreneurs are not passive victims of the climate hazards but are pragmatic architects of their resiliency amidst disasters. Their practices reflect a shift from merely surviving disasters to strategically embedding resilience in daily operations.
3. The emphasis on legality and responsibility highlights how sustainability is not a trend but a structural principle. It can be concluded that environmental stewardship anchored in ethics reinforces the idea that compliance and compassion can coexist. Also, permitting the businesses to operate can be concluded as not a mere regulatory requirement, but also a proactive tool for ecological accountability and consumer trust.
4. Holistic interpretation of sustainability underscores how SMEs operate at a moral intersection, converging social equity, environmental care, and financial prudence. Also, long-term resilience requires cross-sector commitment, inclusive leadership, and policies that reflect lived realities. Essentially, values are not separate entities from profitability and sustainability; they are the foundations.
5. The proposed framework is more than a blueprint for risk reduction among the SMEs but also encapsulates a strategic philosophy for climate-ready entrepreneurship. By integrating safety, sustainability, and solidarity, business success and outcomes are redefined. The lasting value lies in equipping the SMEs to thrive across the economy, ethics, society, and environment amid disasters and uncertainty.

Recommendations

Based on the findings and conclusions, the following are recommended:

1. SMEs should invest in modular storage units, weather-resistant inventory systems, and flexible construction schedules to mitigate disruption-related costs. The LGUS may also provide incentives for disaster-proof facilities and create contingency microfinancing programs to reduce financial strain during disaster recovery.
2. It is recommended to establish community-based climate readiness hubs where SMEs can share warehousing spaces, tools, and resources. Organizations and government agencies could facilitate peer exchanges and workshops on cost-efficient adaptive technologies and operational contingency planning.
3. It is recommended that fast-track permitting systems for SMEs that meet basic environmental criteria are developed, coupled with subsidized training programs on eco-certification and green business practices, especially on procurement. The LGU should also provide an annual sustainability assessment to

guide the SMEs toward compliance, whereas the proposed framework can be utilized as basis for the metrics.

4. It is recommended that Local Government Units in the province are able to provide and calibrate their Disaster Risk and Reduction plans in accordance with the needs of consumers and businesses there are during disasters. Considering their 5% calamity fund, it is recommended to also help residents to fix their houses and provide possible aid among affected SMEs.

5. It can also be recommended to encourage multi-stakeholder alliances that include SMEs, the academe, and disaster experts to co-design an inclusive and locally rooted sustainability blueprint. Resiliency scorecards could incentivize investment in businesses that perform well across the six dimensions in the proposed framework.

6. It is recommended that the proposed framework be mainstreamed through formal LGU adoption, pilot programs, and integration into regional economic development plans. They may offer recognition and capacity-building grants among SMEs that exemplify its principles, thereby turning abstract strategy into tangible and significant impact in the community and environment.

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