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Sustainable Business Processes, Market Intelligence, and Food Waste Reduction in Hospitality

Vanessa Claudia¹, Dudi Permana²

¹Universitas Mercu Buana, Jakarta, Indonesia, email. vanessahatter1@gmail.com

²Universitas Mercu Buana, Jakarta, Indonesia, email. dudi.permana@mercubuana.ac.id

Corresponding Author: vanessahatter1@gmail.com¹

Abstract: This study develops a conceptual framework explaining how sustainable business processes and market intelligence contribute to food waste reduction through the mediating role of environmental awareness in the hospitality industry. The study adopts a conceptual approach by synthesizing recent literature on sustainability management, strategic capability, and organizational behavior. The proposed framework suggests that sustainable business processes and market intelligence enhance organizational environmental awareness, which subsequently encourages more systematic and effective food waste reduction practices. Environmental awareness is positioned as a central cognitive mechanism linking strategic capabilities with sustainability outcomes. This study contributes theoretically by integrating process-based, market-based, and cognition-based perspectives within a unified structure and provides a foundation for future empirical research and managerial decision-making in hospitality organizations.

Keyword: Sustainable Business Processes, Market Intelligence, Environmental Awareness, Food Waste Reduction.

INTRODUCTION

Food waste has become a major global sustainability concern due to its environmental, economic, and social consequences. A significant proportion of food produced worldwide is lost or wasted annually, contributing to greenhouse gas emissions, inefficient resource utilization, and increased operational costs across industries (Todd, 2024). The hospitality sector is recognized as one of the largest contributors to avoidable food waste because of buffet systems, demand forecasting inaccuracies, portion management challenges, and service quality standards that prioritize abundance (Dhir et al., 2020; Filimonau & De Coteau, 2019). These operational characteristics position hotels not only as contributors to environmental degradation but also as strategic actors capable of implementing impactful waste reduction initiatives.

In recent years, sustainability discussions within hospitality management have shifted from compliance-based approaches toward more strategic and capability-driven perspectives. The Natural Resource-Based View introduced by Hart (1995) emphasizes that environmental capability can serve as a source of competitive advantage when embedded within

organizational processes. Similarly, sustainability-oriented business process literature argues that structured operational systems integrating environmental considerations can strengthen long-term performance and ecological accountability (Bocken et al., 2014; Awan et al., 2024). However, despite increasing sustainability initiatives, many hospitality organizations struggle to translate environmental intentions into measurable food waste reduction outcomes. This gap suggests that sustainability performance is influenced not only by operational systems but also by internal cognitive mechanisms.

Market-based capability also plays an important role in shaping sustainability behavior. Organizations that possess strong market intelligence are better able to interpret consumer expectations, competitive positioning, and environmental trends (Sun, 2024; Chen, 2022). Market intelligence refers to the organizational ability to collect and analyze external information for strategic decision-making. Nevertheless, prior research predominantly examines market intelligence in relation to innovation or financial performance, while its role in strengthening internal environmental awareness remains underexplored.

Environmental awareness, defined as the collective recognition of environmental consequences arising from organizational activities, functions as a cognitive mechanism that shapes perception and behavioral intention (Henriques & Sadorsky, 1999; Khan et al., 2022). Without adequate environmental awareness, sustainability initiatives may remain symbolic or inconsistently implemented. Therefore, understanding how strategic capabilities influence environmental awareness becomes essential in explaining sustainable operational outcomes such as food waste reduction.

Based on the above discussion, this study aims to develop a conceptual framework explaining how sustainable business processes and market intelligence contribute to food waste reduction through the mediating role of environmental awareness within the hospitality industry. Specifically, this article addresses the following research questions: (1) Do sustainable business processes influence environmental awareness? (2) Does market intelligence influence environmental awareness? (3) Does environmental awareness influence food waste reduction? (4) Does environmental awareness mediate the relationship between sustainable business processes and food waste reduction? and (5) Does environmental awareness mediate the relationship between market intelligence and food waste reduction? By integrating strategic, process-based, and cognitive perspectives, this study seeks to provide a theoretical foundation for future empirical research and managerial sustainability practices in hospitality organizations.

METHOD

This study employs a conceptual research design aimed at developing a theoretical framework that explains the relationships among sustainable business processes, market intelligence, environmental awareness, and food waste reduction in the hospitality industry. The research does not involve primary data collection but focuses on theory development through systematic literature synthesis.

The research subject of this study is the body of academic literature related to sustainability management, strategic capability, organizational behavior, and food waste management in hospitality contexts. Sources were obtained from peer-reviewed international journals, seminal theoretical works, and recent empirical studies to ensure theoretical relevance and robustness. The literature selection prioritized publications discussing sustainability-oriented processes, market sensing capability, environmental cognition, and waste reduction practices in service industries.

The research procedure involved identifying key theoretical constructs, comparing prior findings, and synthesizing conceptual relationships among variables. Through deductive reasoning, the study integrates process-based, market-based, and cognition-based perspectives to formulate research propositions. Environmental awareness is positioned as a mediating

construct based on recurring theoretical arguments emphasizing its role in translating strategic capability into environmental performance.

Although this study is conceptual, the proposed framework is designed to be empirically testable. For future empirical research, the model may be examined using a quantitative survey approach targeting hospitality organizations, particularly star-rated hotels in urban areas. Data may be collected through structured questionnaires distributed to managerial respondents involved in operational and sustainability decision-making. Structural Equation Modeling is recommended as an analytical technique due to its capability to evaluate complex relationships among multiple constructs simultaneously.

RESULTS AND DISCUSSION

Results

Sustainable Business Process

Sustainable business process refers to organizational operational systems that integrate environmental considerations into routine procedures, decision flows, and value-creation activities. Scholars such as Bocken et al. (2014), Awan et al. (2024), and Hart (1995) emphasize that sustainability-oriented processes extend beyond efficiency by embedding ecological accountability and long-term resource optimization into daily operations. Unlike traditional process efficiency that primarily emphasizes cost and speed, sustainable business processes incorporate ecological impact, waste minimization, and systemic resource management, enabling organizations to internalize environmental responsibility rather than treating it as an external obligation.

In service industries, particularly hospitality and foodservice, process design plays a crucial role in shaping consumption patterns, procurement systems, and waste management mechanisms. Empirical findings from Elkhwesky et al. (2022) and Dhir et al. (2020) indicate that operational workflows emphasizing monitoring, measurement, and continuous improvement significantly influence environmental performance outcomes. However, most research remains concentrated on manufacturing sectors, leaving limited theoretical exploration regarding how sustainable business processes influence environmental cognition and awareness within organizational members, especially in hospitality environments where routine activities directly affect resource consumption and waste generation.

Market Intelligence

Market intelligence represents an organization's capability to collect, analyze, and interpret market-related information to support strategic decision-making. Strategic management scholars including Sun (2024) and Chang et al. (2024) argue that market intelligence reflects proactive sensing and anticipatory analysis rather than reactive compliance. It involves competitor tracking, consumer behavior interpretation, and environmental scanning, enabling organizations to respond strategically to sustainability trends rather than merely reacting to external pressure.

Recent sustainability literature highlights that firms with higher market intelligence tend to identify emerging green demands, regulatory shifts, and reputational risks earlier than competitors (Chen, 2022; Maes, 2024). This anticipatory capacity fosters strategic alignment toward environmental initiatives and enhances adaptive organizational learning. Nevertheless, existing studies predominantly examine market intelligence in innovation or financial performance contexts, while its role in shaping environmental awareness and sustainability-oriented behavior remains underexplored, particularly in food-related and hospitality industries where consumer perception and brand image strongly influence operational decisions.

Environmental Awareness

Environmental awareness refers to the cognitive and perceptual understanding of environmental consequences arising from organizational activities. Unlike environmental commitment, which denotes behavioral or policy-level dedication, awareness functions as a psychological precursor shaping perception, evaluation, and subsequent behavioral intentions. Conceptual works by Henriques and Sadorsky (1999) and empirical findings from Khan et al. (2022) emphasize that awareness emerges through knowledge dissemination, leadership messaging, and structured internal communication.

Empirical and conceptual studies consistently suggest that awareness acts as a mediating mechanism between structural capabilities and sustainability performance (Rani et al., 2024; Chen et al., 2018). However, a significant portion of prior research focuses on individual consumer awareness rather than collective organizational awareness. This creates a theoretical gap in understanding how internal cognitive recognition within firms translates into operational environmental outcomes such as food waste reduction, particularly within service-intensive industries where organizational behavior is shaped by shared routines and decision-making norms.

Food Waste Reduction

Food waste reduction represents systematic efforts to minimize edible and inedible food loss across procurement, storage, preparation, and post-consumption stages. Global sustainability literature recognizes food waste as a critical environmental and economic challenge, with hospitality identified as one of the most significant contributors due to buffet systems, forecasting inaccuracies, and portioning inefficiencies (Dhir et al., 2020; Filimonau & De Coteau, 2019). Studies by Aamir et al. (2018) further demonstrate that inefficient operational planning and surplus production substantially increase avoidable waste within hotel operations.

While numerous investigations emphasize technological solutions and policy enforcement, fewer studies examine the cognitive and strategic drivers behind waste reduction initiatives. Research by Özbük and Coşkun (2020) and Ma (2024) indicates that behavioral nudging and organizational culture play essential roles in encouraging preventive waste practices. This imbalance highlights a research opportunity to explore how organizational capabilities and awareness-based mechanisms influence waste minimization practices beyond regulatory compliance, particularly in rapidly urbanizing hospitality markets.

Sustainable Business Process and Environmental Awareness

Theoretical perspectives suggest that structured and sustainability-oriented business processes create repeated exposure to environmental metrics, reporting systems, and performance evaluations, gradually cultivating environmental awareness among organizational members. Continuous interaction with sustainability indicators encourages cognitive internalization of ecological considerations (Bocken et al., 2014; Elkhwesky et al., 2022). Process formalization thus functions not only as an efficiency tool but also as a cognitive reinforcement mechanism that institutionalizes environmental values through standard operating procedures.

However, prior literature rarely conceptualizes this relationship explicitly, especially within hospitality or foodservice domains. Most existing discussions emphasize environmental outcomes rather than awareness formation, signaling a need for integrative theoretical development that links operational structure with collective environmental cognition. This gap suggests that sustainable process design may indirectly influence sustainability performance through awareness-building mechanisms rather than direct operational enforcement alone.

Market Intelligence and Environmental Awareness

Market intelligence contributes to environmental awareness by translating external environmental signals into internal strategic understanding. Organizations capable of interpreting sustainability trends, green consumer expectations, and competitive environmental positioning are more likely to internalize environmental knowledge (Sun, 2024; Chen, 2022). This translation process strengthens cognitive alignment between external market dynamics and internal sustainability priorities.

Despite this logical linkage, most research frames market intelligence within profitability or innovation narratives rather than environmental cognition. Studies such as Chang et al. (2024) and Maes (2024) demonstrate its relevance in strategic adaptation but seldom extend the discussion toward awareness development. This theoretical gap underscores the importance of articulating how proactive market sensing capabilities influence collective environmental perception, particularly in hospitality settings where customer expectations significantly shape operational sustainability behavior.

Environmental Awareness and Food Waste Reduction

Environmental awareness serves as a psychological catalyst that transforms abstract sustainability goals into concrete operational behavior. Awareness increases sensitivity toward resource inefficiency and ecological impact, encouraging proactive waste minimization (Rani et al., 2024; Khan et al., 2022). Within hospitality contexts, employees and managers who understand the environmental implications of overproduction and inefficient procurement are more inclined to adopt preventive strategies rather than reactive disposal measures.

Nonetheless, empirical literature frequently emphasizes policy enforcement and technological adoption while underrepresenting cognitive drivers. Studies such as Ma (2024) and Özbük and Coşkun (2020) indicate that behavioral and perceptual factors significantly influence waste reduction consistency. This imbalance highlights the necessity for conceptual frameworks that position environmental awareness as a central mechanism in sustainability performance, bridging strategic capability development with measurable environmental outcomes.

Discussion

Sustainable Business Processes and Environmental Awareness

Sustainable business processes emphasize the integration of environmental considerations into daily operational routines, performance measurements, and decision-making structures. When sustainability is embedded within procedural workflows, such as procurement standards, inventory control, and waste monitoring systems, organizational members are repeatedly exposed to environmental indicators and accountability mechanisms. This continuous exposure encourages cognitive recognition of ecological consequences and gradually strengthens collective environmental awareness within the organization.

Prior sustainability management literature suggests that structured operational systems play a critical role in shaping organizational behavior and perception. Process formalization does not merely improve efficiency but also institutionalizes environmental values through standard operating procedures and performance reviews. However, much of the existing research concentrates on efficiency or compliance outcomes rather than examining how process-based sustainability initiatives cultivate internal environmental cognition. This indicates a theoretical gap in linking sustainable operational design with awareness formation, particularly in hospitality and foodservice environments where routine activities strongly influence resource consumption patterns.

The conceptual analysis indicates that sustainable business processes and market intelligence function as strategic capabilities that shape environmental awareness within hospitality organizations. The synthesis of prior literature suggests that structured

sustainability-oriented procedures reinforce environmental cognition by embedding ecological considerations into daily operational routines. This supports Proposition 1, which argues that sustainable business processes positively influence environmental awareness.

Market Intelligence and Environmental Awareness

Market intelligence refers to an organization's capability to gather, interpret, and utilize external information related to consumer expectations, competitive positioning, and industry trends. Within sustainability contexts, market intelligence enables organizations to identify emerging environmental preferences, reputational risks, and regulatory developments at an early stage. This proactive sensing capability supports strategic anticipation rather than reactive compliance, allowing firms to align internal understanding with external environmental signals.

Theoretical perspectives in strategic management argue that organizations capable of interpreting environmental and market-based information are more likely to internalize sustainability knowledge and translate it into shared awareness. Nevertheless, previous studies predominantly frame market intelligence as a driver of innovation, financial performance, or competitive advantage, leaving limited exploration of its cognitive implications. In hospitality settings where consumer perception and brand image significantly influence operational decisions, the connection between market intelligence and environmental awareness becomes particularly relevant yet under-theorized.

Similarly, market intelligence contributes to environmental awareness by translating external environmental signals into internal strategic understanding. Organizations capable of interpreting sustainability trends and consumer expectations are more likely to internalize environmental knowledge, thereby strengthening awareness. This supports Proposition 2.

Environmental Awareness and Food Waste Reduction

Environmental awareness represents the collective understanding and recognition of ecological consequences arising from organizational activities. It functions as a psychological and strategic precursor that shapes evaluation, intention, and subsequent behavior. In operational contexts, heightened environmental awareness increases sensitivity toward inefficiencies, resource overuse, and waste generation, thereby encouraging more deliberate and systematic reduction efforts.

Existing sustainability literature frequently highlights technological adoption, regulatory enforcement, and managerial policies as primary determinants of waste minimization. However, cognitive and perceptual drivers are often underrepresented despite their critical role in influencing day-to-day operational behavior. Within the hospitality industry, where food waste is strongly associated with routine practices and forecasting decisions, environmental awareness may serve as a central mechanism that transforms abstract sustainability objectives into tangible action. This suggests the need for conceptual frameworks that position awareness not merely as an outcome but as an active determinant of environmental performance.

Environmental awareness, positioned as a cognitive mechanism, plays a central role in influencing food waste reduction. Literature consistently indicates that awareness increases sensitivity toward resource inefficiency and ecological impact, encouraging preventive operational behavior rather than reactive disposal. This supports Proposition 3.

The Mediating Role of Environmental Awareness

Environmental awareness can also be conceptualized as a mediating mechanism that bridges organizational capabilities and sustainability outcomes. Sustainable business processes and market intelligence provide structural and informational inputs, while awareness represents the cognitive channel through which these inputs influence operational behavior. Without

adequate awareness, strategic capabilities may remain superficial or inconsistently implemented, limiting their environmental impact.

Conceptualizing awareness as a mediator allows a more integrative understanding of sustainability performance by combining process-based, market-based, and cognition-based perspectives. This integrative view is particularly important in hospitality environments where environmental initiatives often require both strategic alignment and behavioral consistency. By positioning environmental awareness as a central connecting mechanism, the proposed framework advances theoretical discussions on how internal capabilities translate into measurable environmental outcomes.

Furthermore, environmental awareness acts as a mediating mechanism linking strategic capabilities and sustainability outcomes. Sustainable business processes and market intelligence provide structural and informational inputs, while awareness channels these inputs into consistent waste reduction practices. Therefore, Propositions 4 and 5 are theoretically supported through integrative analysis.

Overall, the findings of this conceptual study highlight that sustainability performance in hospitality is influenced not only by operational systems or external information but also by the cognitive alignment within the organization.

Based on the preceding propositions, this study proposes a conceptual framework that positions environmental awareness as a central cognitive mechanism linking organizational strategic capabilities and sustainability outcomes. Sustainable business processes and market intelligence are expected to enhance environmental awareness, which subsequently influences food waste reduction practices within hospitality organizations. This framework integrates operational, strategic, and cognitive perspectives to provide a holistic understanding of environmental performance.



Source: Developed by the authors

Figure 1. Conceptual Framework

CONCLUSION

This study develops a conceptual framework explaining how sustainable business processes and market intelligence contribute to food waste reduction through the mediating role of environmental awareness in the hospitality industry. In response to the research questions, the analysis suggests that structured sustainability-oriented processes and proactive market intelligence capabilities strengthen organizational environmental awareness. Environmental awareness, in turn, functions as a central cognitive mechanism that encourages more systematic and preventive food waste reduction practices. Furthermore, environmental awareness mediates the relationship between strategic capabilities and sustainability outcomes, indicating that internal cognitive alignment is essential for translating strategic intentions into operational impact.

The contribution of this study lies in integrating process-based, market-based, and cognition-based perspectives into a unified theoretical structure. By positioning environmental awareness as a strategic organizational asset, this framework advances sustainability management theory and provides a structured foundation for empirical investigation in hospitality contexts. From an industrial perspective, the study highlights the importance of

embedding sustainability into operational systems and strengthening market sensing capabilities to achieve consistent environmental performance improvements. This conceptual integration supports the development of more strategically aligned and environmentally responsible hospitality management practices.

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