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Digital Transformation and Supply Chain Resilience through Cloud, ERP, and BI Integration in Mondelez International

Ainu Azzaria[1], Demitri Fernando Putra Aryandi[2], Soetam Rizky Wicaksono[3]

[1,2,3]*Universitas Ma Chung, Malang, Indonesia*

322310021@student.machung.ac.id, 322310010@student.machung.ac.id, soetam.rizky@machung.ac.id

ABSTRACT

This study examines Mondelez International's digital transformation specifically its infrastructure migration to the cloud (AWS), SAP RISE ERP implementation, and Business Intelligence (Tableau) platform utilization with a focus on implications for procurement and supply chain resilience. The research method used was a Research & Development (R&D) approach based on a secondary literature review, followed by a SWOT analysis to evaluate internal and external factors, and a PEST analysis to examine the macro-environmental context. The results indicate that the integration of cloud + ERP + BI strengthens cross-functional data visibility, accelerates decision-making, and improves procurement efficiency but challenges remain from commodity dependence (cocoa), cross-border operational complexity, and fiscal/environmental regulations in certain jurisdictions. The study also identifies strategic opportunities for expansion into digital channels and new products, as well as the need for continued investment in factory automation to reduce costs. Proposed managerial implications include strengthening raw material hedging practices, accelerating factory digitalization, and sharpening product portfolio strategies to align with regulatory pressures and consumer preferences. These findings provide lessons for global FMCG companies in integrating technology, data, and operational strategies to enhance supply chain resilience. Keywords: Mondelez, digital transformation, SAP RISE, Tableau, supply chain resilience.

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Corresponding Author
Ainu Azzaria
Universitas Ma Chung, Malang, Indoensia
322310021@student.machung.ac.id

1. INTRODUCTION

Mondelez International is a multinational company from the United States that operates in the snack food sector, such as biscuits, chocolate, candy, and powdered beverages. The company was officially established on October 1, 2012, following its separation from Kraft Foods Inc., where the global snack business unit became Mondelez International, while the grocery business remained as Kraft Foods Group. The name "Mondelez" comes from a combination of the words *mundus* (world) and delez (a modification of delicious), reflecting the company's vision to create a "delicious world." Since its inception, Mondelez has committed to becoming a global leader in the snack industry with well-known brands such as Oreo, Cadbury, Toblerone, Milka, Ritz, and Trident [1], [2].

Before implementing a comprehensive digital transformation, Mondelez faced significant operational challenges due to its vast global scale. Its complex organizational structure and information technology (IT) systems led to data silos across countries, fragmented procurement systems, and poorly integrated business processes. These conditions are widely recognized in major enterprises, where legacy architectures often cause fragmented decision-making and low responsiveness [3]. Supply chain and distribution activities still relied on traditional systems, making it difficult to respond quickly to changes in consumer behavior, which was shifting toward digital channels and e-commerce.

Mondelez began its digital transformation systematically through several major initiatives. One was migrating its infrastructure to cloud computing using Amazon Web Services (AWS) and modernizing its ERP system through SAP RISE an approach aligned with global best practices in cloud ERP modernization, which enhance scalability and cross-regional data integration [4]. Additionally, Mondelez implemented data analytics and business intelligence using the Tableau platform to unify cross-functional data, particularly in procurement and supply chain areas. Literature on digital supply chain systems shows that unified analytics supports real-time visibility, risk detection, and accelerated decision-making [1], [5], [6]. The company also collaborated with Orange Business to build a global digital work environment using Microsoft Teams, enhancing communication and collaboration efficiency across divisions. Furthermore, Mondelez partnered with Accenture and Publicis Groupe to develop AI-based marketing, enabling more effective content personalization and digital marketing strategies [6], [7].

These changes represent a significant shift in Mondelez's business model from conventional operations to a data-driven and digitally enabled enterprise. Digitalization of agrifood and snack supply chains has been shown to increase efficiency, enhance traceability, and strengthen resilience [1], [5], [7]. By digitizing the entire value chain, Mondelez gains real-time data visibility, accelerates decision-making, and strengthens its competitive position in the global market.

Analyzing Mondelez's digital transformation is important because the company is one of the largest players in the global snack industry, with revenues reaching tens of billions of dollars and operations spanning over 160 countries. Research on global supply chain transformation indicates that digitalization is crucial for handling disruptions, sustainability pressures, and the growing complexity of international markets [2], [7], [8]. Therefore, this background demonstrates that studying Mondelez International's digital transformation is crucial to understanding how digitalization can be a key factor in maintaining competitiveness, improving operational efficiency, and addressing disruption challenges in the digital economy era.

2. METHODS

This research employed a research and development (R&D) approach, which included a literature review and information mapping of Mondelez International, the study object. The R&D method allows for an evaluation of the company's internal and external conditions based on secondary data such as company reports, official websites, industry articles, and online publications and thus avoids relying on primary surveys or interviews [1], [9]. This approach helps ensure a comprehensive and objective analysis, utilizing publicly available data sources.

Furthermore, after collecting secondary data, a SWOT analysis was conducted to identify internal and external factors influencing Mondelez's strategic position. The SWOT process in this study involved classifying data obtained from the internet financial reports,

business analysis articles, and company publications into the categories of Strengths, Weaknesses, Opportunities, and Threats. As explained in the literature, SWOT is a framework used to evaluate an organization's position within its internal and external environments [9], [10], [11].

Following the internal-external SWOT analysis, the study continued with a PEST analysis to examine the macro-environmental factors political, economic, social, and technological that could impact Mondelez's operations and strategy. The PEST framework was chosen because it allows for the identification of broad external conditions that are often beyond the company's control but crucial for long-term strategic planning [12], [13]. Thus, the combination of R&D → SWOT → PEST enabled the study to achieve its objectives: mapping the internal and external situation and generating relevant and contextual strategic recommendations.

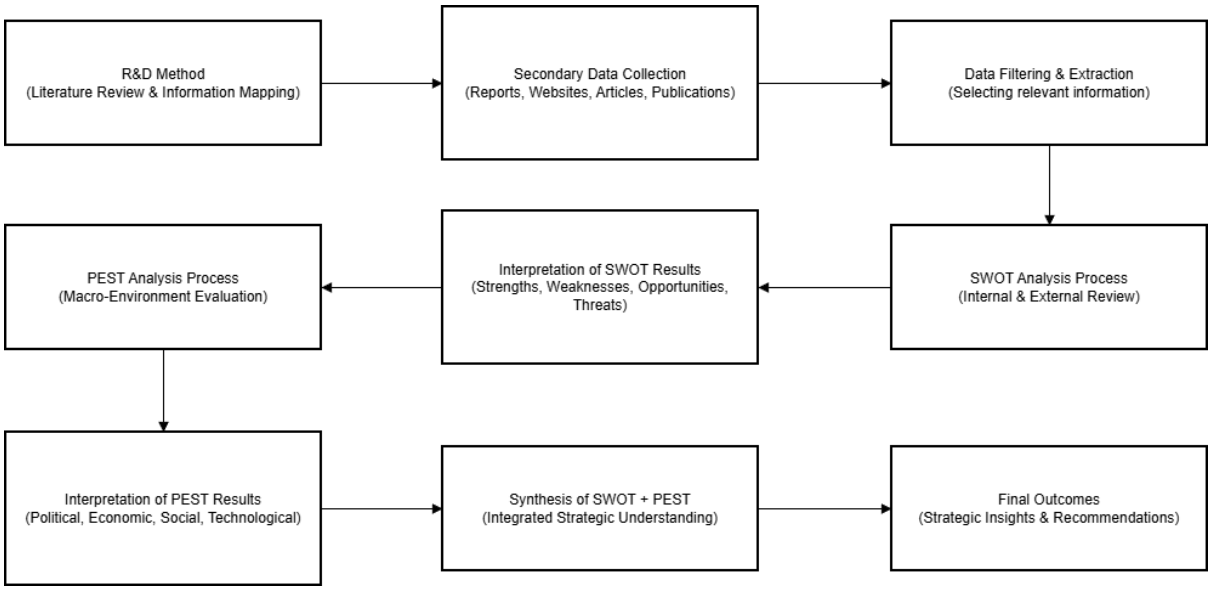

Figure 1. Workflow

3. RESULTS AND DISCUSSION

3.1 SWOT Analysis

Mondelez's advantage lies in its global brand portfolio and extensive international distribution reach, enabling it to maintain consumer loyalty and large-scale production across multiple markets [2], [7]. Iconic brands and a global reputation create a competitive "moat" that is difficult for competitors to replicate, allowing the company's position in the snack food industry to remain relatively stable despite global fluctuations. In the literature, the success of large snack companies in maintaining product diversification and global reach is often attributed to their resilience to commodity shocks and market dynamics. For example, studies on agrifood supply chain risks show that diversification and distribution flexibility help supply chains withstand supply pressures and global volatility.

However, these strengths are offset by structural weaknesses, particularly dependence on commodity raw materials particularly cocoa which is vulnerable to global price fluctuations. The volatility of cocoa prices, as outlined in studies on cocoa exports and the impact of global prices, suggests that dependence on commodities like cocoa makes chocolate and snack companies highly vulnerable to price and supply pressures [9], [14]. This dependency becomes a weakness because when raw material prices spike, the company's

margins can be squeezed even with high production volumes. Furthermore, the complexity of the global supply chain given that Mondelez relies on cocoa supplies from various countries also carries risks: disruptions in production, quality, logistics, and regulations can disrupt operational stability. Studies on cocoa supply chain risks identify that production and supply are the most vulnerable points in the value chain, requiring stringent supply chain management to prevent risks from compromising performance [9], [8].

With a strong brand base and global distribution, Mondelez has the opportunity to expand market penetration, particularly in emerging markets where a growing middle class and urbanization are driving demand for snacks and light consumer products. In the context of shifting consumer preferences toward convenience, snacking, and product variety including healthy snacks, small-portion products, or innovative local flavors the company can leverage its brand portfolio to develop new products. This aligns with the product diversification and global portfolio optimization strategies outlined in the global food industry and supply chain literature: global snack companies that continuously innovate and respond to consumer trends manage to maintain growth despite market changes [2], [10], [12].

The primary threat to Mondelez arises from fluctuations in the prices of raw materials such as cocoa and other food ingredients, which can pressure profitability if price increases cannot be offset through efficiency measures or price adjustments. Empirical studies on food commodity price volatility show that food and agricultural commodity prices are highly sensitive to global conditions, and these fluctuations can have a significant impact on companies dependent on commodities. Furthermore, intense competition in the global snack industry from both other large companies and local and private label producers adds pressure on Mondelez to continuously innovate and maintain efficiency [14]. Changing consumer preferences, such as increased demand for healthy snacks or non-traditional alternative products, could also reduce demand for Mondelez's conventional products if adaptation is slow [12], [8].

3.2 PEST Analysis

Politically, Scotland's status as part of the United Kingdom brings unique complexities in tax regulations and alcohol policies. The government has implemented a Minimum Unit Pricing (MUP) policy for alcohol since 2018 a policy that sets a minimum price per unit of alcohol to prevent cheap spirits from being sold below a certain threshold. Official evaluations indicate that this MUP resulted in a 3.0% decrease in adult alcohol sales in the initial years of its implementation. This policy clearly burdens the alcohol industry with price regulations and taxes/excise, potentially squeezing producer margins if costs and selling prices are not optimally aligned [13].

Economically, the high regulatory burden and minimum alcohol prices increase operational and distribution costs for producers if they produce within Scotland or target the local market. Consumers facing higher alcohol prices may reduce consumption or switch to non-alcoholic products or other substitutes. Empirical data shows that after the implementation of the MUP, off-trade alcohol sales in Scotland dropped significantly: a 3.5% decrease in the first year of implementation compared to the previous trend. This suggests that tax and regulatory burdens can reduce sales volumes and pressure profitability, particularly for price-sensitive products [13].

Socially, the MUP policy and regulatory pressure reflect changing government and public attitudes toward alcohol aimed at reducing the health and social impacts of excessive alcohol consumption. The implementation of the MUP has successfully reduced alcohol-

related deaths and alcohol-related hospitalizations in Scotland. This could shift consumer preferences in the long term consumers may be more inclined to avoid alcohol and prefer non-alcoholic products or healthy snacks. For companies considering producing spirits or alcohol-related products, this shift signals that the market may be shrinking or structurally changing, requiring adaptation to consumer preferences and social regulations [15], [13].

From a regulatory and public policy perspective, academic studies confirm that policies like the MUP have a systemic effect on the beverage industry: reducing alcohol consumption, putting pressure on the profitability of large producers, and forcing adaptations in marketing and distribution strategies [1], [6]. Therefore, for global companies considering operating or distributing in Scotland or producing products with alcohol these regulatory risks should be taken seriously, as they could impact sales, margins, and overall product strategy.

Table 1. PEST Analysis Table

PEST Analysis	Implicatioins for Mondelez
Political	The UK government's high alcohol duty is squeezing margins. Scotland's minimum alcohol price policy limits pricing flexibility and could reduce sales volumes.
Economic	Increased production costs due to the alcohol duty could reduce the profitability of alcoholic beverages or snacks produced in Scotland. Manufacturers should consider pass-through pricing strategies or cost efficiency.
Social	Public health pressures are driving stricter alcohol regulations, potentially shifting consumers toward lower-alcohol beverages or healthier snack products. These changes require portfolio and brand image adaptations.
Technology	Automation adoption in Scottish food/beverage manufacturing remains low, increasing labor and operational costs. However, there are opportunities for technological modernization to improve manufacturing efficiency and competitiveness.

CONCLUSION

Mondelez International is a leading multinational snack food company, with a global portfolio of brands including Oreo, Cadbury, Milka, and Toblerone, and revenues expected to reach approximately US$36 billion by 2024. This study uses a SWOT analysis to evaluate Mondelez's strengths, weaknesses, opportunities, and threats as a strategic foundation. Comparative analysis and synthesis methods are also applied to link the SWOT results with a broader PEST analysis specifically political, economic, social, and technological factors in specific contexts such as UK regulations, alcohol taxation, and manufacturing technology.

The discussion reveals that Mondelez's strengths lie in its strong global brand, extensive scale of operations, and commitment to sustainability; while its key weaknesses include its reliance on cocoa commodities, supply chain complexity, and high investment in systems transformation. Key opportunities identified include expansion into the cakes and pastries segment, strengthening e-commerce channels, and investing in sustainable innovation. On the threat side, commodity cost pressures, environmental and tax regulations, geopolitical risks, and competition in the snack industry are significant factors. The PEST analysis adds an

external dimension: for example, high liquor regulations in the UK, uncertainty about tariffs and trade policies, and low adoption of automation in local factories pose technological challenges.

Based on these findings, the research objective of identifying strategic factors that could impact Mondelez's growth and competitiveness has been achieved. The emerging strategic implications suggest that Mondelez needs to continue optimizing supply chain efficiency and raw material hedging, increasing factory digitization and automation, and responding to environmental and tax regulations with a flexible portfolio strategy. Furthermore, innovative product development and expansion in growth segments (such as cakes) and online channels should be prioritized to ensure the company maintains long-term growth momentum amidst external risks.

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