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The Strategic Influence of Sustainable Supply Chain Elements on Profitability in Beverage Manufacturing Companies

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KEYWORDS

Profitability, Green Procurement, Beverage Manufacturing, Sustainable Supply Chain, Operational Efficiency.

ABSTRACT

Sustainable supply chain management (SSCM) has become an essential driver of profitability in beverage manufacturing, were high resource consumption and competitive market pressures demand efficiency and innovation. This research analyzes the strategic influence of sustainable supply chain (SSC) elements on profitability in beverage manufacturing companies. The objective is to determine how sustainable procurement, eco-friendly production practices, efficient distribution systems, and reverse logistics contribute to profitability indicators such as cost savings, return on investment, and revenue growth. Data are obtained from 112 managers and supply chain personnel in beverage manufacturing firms, with 78% valid responses. Analytical methods included regression and correlation analysis using IBM SPSS software version 26 to test the relationships between the variables. The outcomes indicate that eco-friendly production was the most influential predictor of sustainable procurement ($\beta = 0.198, p = 0.003$), profitability ($\beta = 0.241, p = 0.001$), followed by reverse logistics ($\beta = 0.143, p = 0.037$), and efficient distribution ($\beta = 0.182, p = 0.005$). Profitability refers to the financial performance of beverage manufacturing firms, measured through cost savings, return on investment, and revenue growth. The results highlight that embedding sustainability across supply chain operations substantially enhances financial performance, making it a strategic imperative for beverage manufacturers seeking long-term growth and competitive advantage.

INTRODUCTION

The SSCM has been widely accepted, since sustainable development is becoming more and more important. Even while most supply chains aim for actual sustainability, there has been development in various areas of related research, even though some of the SSCM difficulties have been raised [1]. As social and environmental issues, especially climate change, have gained more international attention, SSCM has garnered a lot of interest in the decade ending in 2020. In addition to revenue, SSCM mandates companies along a supply chain to report on their social and environmental performance [2]. Supply chain management (SCM) facilitates the organization of this movement of products and services as well as the management of intricate connections between manufacturers, intermediaries, and final consumers. SCM also offers ways to create a positioning strategy and a competitive advantage [3]. In the beverage manufacturing sector, where energy use, packaging materials, and water usage are important considerations, integrating sustainability throughout the supply chain becomes both strategically and morally necessary. Businesses can save operating expenses, meet environmental regulations, and enter new markets while creating long-term value for all parties involved by using sustainable practices [4].

Research Objective

The goal of the research is to analyze how the profitability of beverage manufacturing companies is influenced by sustainable supply chain methods (sustainable production, efficient distribution, reverse logistics). The research aims to look for relationships between sustainability methods and financial measures of performance, such as return on investment, sales growth, and cost savings, and ultimately demonstrate that sustainability creates strategic value that enhances profitability and improves future competitiveness.

Research Organization

Part 1 of the research defines the background, aims, and scope; Part 2 of the literature review examines theories and previous research; Part 3 of the methodology explains the design, sample, data, and analysis; Part 4 of the results and discussion

1 In this study, the words "app" and "platform" are used interchangeably

includes the current demographics, correlations, and regression findings; the discussion interprets the outcomes and implications; and Part 5 of the research concludes by highlighting the main findings, recommendations, limitations, and future research directions.

RELATED WORK

The research investigated the way to improve supply chains' sustainability by utilizing Industry 4.0 and Blockchain technology [5]. The three main areas, smart logistics and transportation, IoT-enabled energy management in smart companies, and smart business models, were assessed. The research's limitations were its dependence on previously published research, which could not adequately convey the difficulties of real-world implementation and the dynamic character of blockchain in SSCM. In the FoodBev Manufacturing companies in South Africa (SA), the algorithm improved international literature, carried out high-level knowledge classification, and accelerated awareness, information exchange, and response [6]. It offered visions into the impact, adaptations, and responses to COVID-19, contextualized through the deployment of instruments and data analysis centered on the SA sector. The research's scope was constrained by its dependence on secondary literature and sector-based tools, which could cause it to ignore long-term or worldwide COVID-19 effects on the beverage and food manufacturing companies.

The research's aim was to identify sustainability issues and gaps in literature [7], as well as identify key sustainability indicators for the Iranian Oil Company's sustainable development supply chain. The research utilized meta synthesis and Delphi methods to gather data on SSC indicators with consideration of stakeholder engagement and sustainability. It was applied to the Iranian Oil Company, therefore limiting the extent to which the identified sustainability indicators could be generalized outside of the Iranian Oil Company, other industries, or regions. The research investigated public emissions data of the 50 largest global beverage and food producers in 2018 to assess corporate reporting and target setting from production in the food chain [8]. The industry was required to increase its reporting of and reductions in greenhouse gas (GHG) emissions to reduce climate change effects. Due to its reliance on available Carbon Disclosure Project (CDP) reports from 2018, the research was limited in its ability to reflect unreported emissions data or current corporate practices. The technique was used to evaluate the effect of internal and external factors on the beverage and food manufacturing industry during the COVID-19 pandemic [9]. It used a qualitative descriptive method, analyzing strengths, weaknesses, opportunities, and threats. The results reveal that the most effective marketing strategy was product development, focusing on increasing creativity, as the current conditions require a balance between internal and external factors. The research's generalization to the broader food and beverage manufacturing companies could be limited due to its focus on a single case company, Nutrifood Indonesia.

METHODOLOGY

The research investigated the effect of SSC approaches on beverage manufacturing firms' profitability using a quantitative methodology. Using a standardized questionnaire that covered manufacturing, distribution, reverse logistics, procurement, and profitability metrics, a standardized questionnaire was utilized to collect data from 112 managers and supply chain employees at beverage manufacturing companies. Analysis was done on 87 valid replies, or 78% of the total. To analyze relationships and the contribution of each sustainability practice to profitability, IBM Statistical Package for the Social Sciences (SPSS) employs correlation and regression for analysis. Figure 1 presents the overall process of the research.

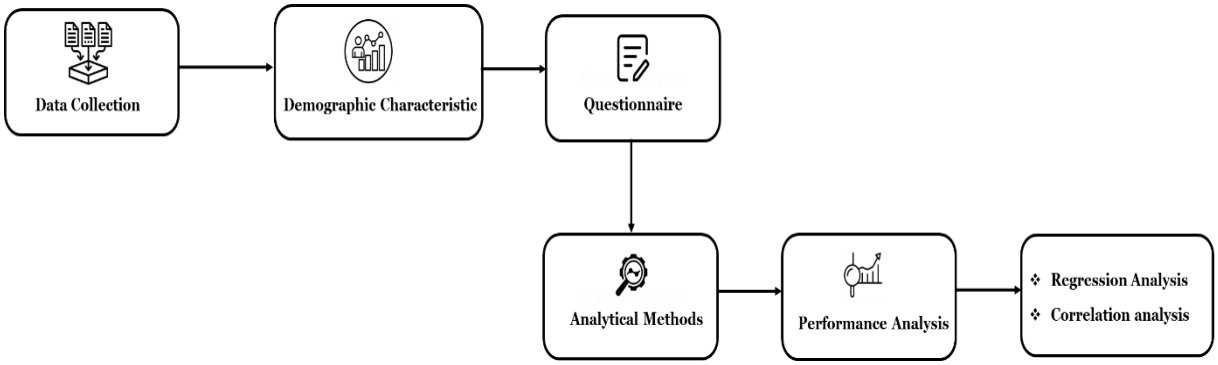

Figure 1: Research Methodology Framework for SSC Profitability Research

Data Collection

Managers and supply chain personnel in beverage manufacturing companies provided data for the research. Out of the 112 questionnaires that had been distributed, 78% (or about 87 replies) were deemed valid and utilized for analysis. Sufficient data dependability and representation of industry practices were guaranteed by this response rate. The quantitative data were obtained from the questionnaire, which analyzed sustainability-related behaviors and their effects on profitability.

Demographic Characteristics

112 managers and supply chain managers of beverage manufacturing companies were given a standardized questionnaire to complete to gather data. Of these, 87 valid replies (78% response rate) were used for analysis. Males made up 70.1% of the

[1] In this study, the words "app" and "platform" are used interchangeably.

respondents, and 36.8% were between the ages of 31 and 40. 32.2% of them had a master's degree or above, while more than half (51.7%) had a bachelor's degree. A combination of early-career and seasoned professionals was represented in the largest group (37.9%) with 5–10 years of experience. Managers accounted for the highest percentage of positions (44.8%), followed by supply chain officers (32.2%) and production/logistics employees (23%). Table 1 displays the demographic characteristics of the research.

Table 1: Respondents' demographic profile (n = 87 valid responses)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	26	29.9
	Male	61	70.1
Age Group	21–30 years	18	20.7
	31–40 years	32	36.8
	41–50 years	24	27.6
	Above 50 years	13	14.9
Education Level	Diploma	14	16.1
	Bachelor's degree	45	51.7
	Master's degree and above	28	32.2
Work Experience	Less than 5 years	20	23.0
	5–10 years	33	37.9
	11–15 years	21	24.1
	Above 15 years	13	15.0
Position in Firm	Manager	39	44.8
	Supply Chain Officer	28	32.2
	Production/Logistics Staff	20	23.0

Questionnaire

The aim of the survey was to investigate the profitability of beverage manufacturing with the incorporation of SSC practices. Each of the five primary variables, such as profitability, eco-friendly production, efficacious distribution, reverse logistics, and sustainable sourcing, was examined with two questions and a five-point Likert scale in Table 2. The items were developed to report financial outcomes such as revenue growth, cost savings, return-on-investment, and operational procedures like sourcing, production processes, and logistic processes. This format provided reliable data for IBM SPSS regression and correlation analysis.

Table 2: Questionnaire Table

Variable	Question
Sustainable Procurement	Does your company prioritize suppliers who follow eco-friendly practices? Have procurement policies reduced material costs through sustainability initiatives?
Eco-friendly Production	Are waste reduction measures actively implemented during production? Has eco-friendly production improved your company's profitability?
Efficient Distribution	Does your distribution system reduce fuel consumption and transport costs? Does efficient distribution directly improve profit margins?
Reverse Logistics	Does your company reuse or recycle returned products effectively? Does reverse logistics contribute positively to profitability?
Profitability	Have sustainable practices led to noticeable cost savings in your company? Has return on investment improved due to SSC initiatives?

Analytical Methods

Using IBM SPSS software, version 26, the research used regression analysis and correlation to analyze how SSCM practices affect profitability. The degree and direction of the correlations between the independent variables (reverse logistics, eco-friendly production, sustainable sourcing, and efficient distribution) and the dependent variable (profitability) were examined using correlation analysis. The predictive impact of these behaviors on profitability was then measured using regression analysis, and the validity of the model was assessed.

RESULT EVALUATION

[1] In this study, the words "app" and "platform" are used interchangeably.

Reverse logistics, sustainable procurement, eco-friendly production, and effective distribution all greatly improved beverage manufacturing companies' profitability, according to the report. The most influential of these was environmentally friendly production, which was followed by procurement, distribution, and reverse logistics. These practices confirmed sustainability as a major factor affecting financial performance, resulting the variance in profitability.

Regression Analysis

Regression analysis confirmed that the four sustainability collectively made a strong and statistically significant contribution to profitability in beverage manufacturing firms. Environmentally friendly production was the most influential predictor, followed by reverse logistics, sustainable procurement, and effective distribution; all of these factors were statistically significant. These results show that incorporating sustainability into production, distribution, procurement, and reverse logistics improves overall financial performance and competitive advantage while also lowering operating costs.

$$X = \beta_0 + \beta_1 Y_1 + \beta_2 Y_{2_{\beta_3}} Y_3 + \beta_4 Y_4 + \varepsilon \quad (1)$$

In Equation (1), X refers to the profitability (dependent variable), Y_1 is the sustainable procurement, Y_2 is the eco-friendly production, Y_3 indicates efficient distribution, Y_4 denotes reverse logistics, β_0 presents the constant (intercept), ε is the error term, and $\beta_1, \beta_2, \beta_3, \beta_4$ show the regression coefficients. Table 3 and Figure 2 illustrates the regression analysis.

Table 3: Assessment of Regression Analysis

Independent Variables	Standardized Coefficient (Beta)	Unstandardized Coefficient (B)	t-value	Sig. (p-value)
Sustainable Procurement	0.198	0.214	3.02	0.003 **
Eco-friendly Production	0.241	0.276	3.45	0.001 **
Efficient Distribution	0.182	0.196	2.87	0.005 **
Reverse Logistics	0.143	0.152	2.11	0.037 *

Note: * indicates the correlation or regression coefficient is significant at the 0.05 level ($p < 0.05$). ** indicates significance at the 0.01 level ($p <; 0.01$).

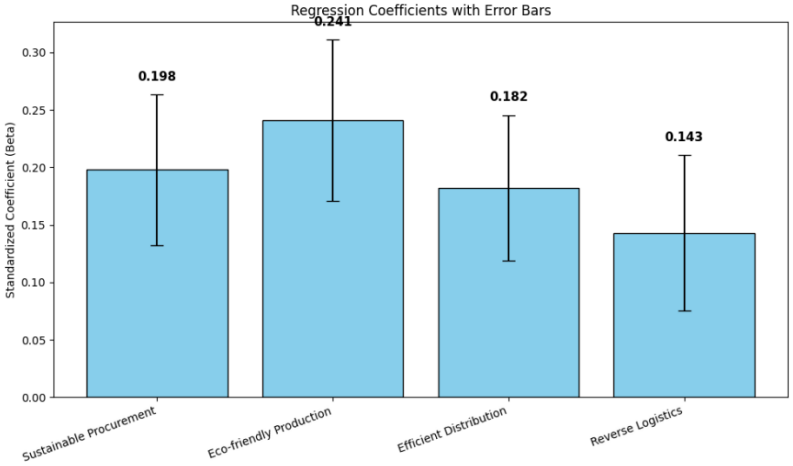

Figure 2: Regression Coefficients of SSC Elements on Profitability

Correlation analysis

According to the correlation analysis, profitability was positively and strongly correlated with each of the four SSC strategies. Reverse logistics (r = 0.442), distribution (r = 0.489), procurement (r = 0.527), and eco-friendly production (r = 0.613) showed the strongest correlation. This suggests a strong correlation between increased profitability in beverage manufacturing firms and the adoption of sustainable initiatives.

$$sYX = \frac{\Sigma(Y_j - \bar{Y})(X_j - \bar{X})}{\sqrt{\Sigma(Y_j - \bar{Y})^2 \, \Sigma(X_j - \bar{X})^2}} \quad (2)$$

In Equation 2, sYX denotes the Pearson correlation coefficient between variables Y and X, Y_j *and* X_j present individual data points of Y and X, and $\bar{Y}$ and $\bar{X}$ are the mean values of Y and X. The correlation analysis's outcome is shown in Figure 3 and

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Table 4.

Table 4: Analysis of the Relationship between SSC Practices and Profitability (n = 87)

Variables	Procurement	Eco-friendly Production	Distribution	Reverse Logistics	Profitability
Sustainable Procurement	1.000	0.462 **	0.398 **	0.352 **	0.527 **
Eco-friendly Production	0.462 **	1.000	0.431 **	0.376 **	0.613 **
Efficient Distribution	0.398 **	0.431 **	1.000	0.401 **	0.489 **
Reverse Logistics	0.352 **	0.376 **	0.401 **	1.000	0.442 **
Profitability	0.527 **	0.613 **	0.489 **	0.442 **	1.000

Note: ** presents the significant at p < 0.01 (1% level)

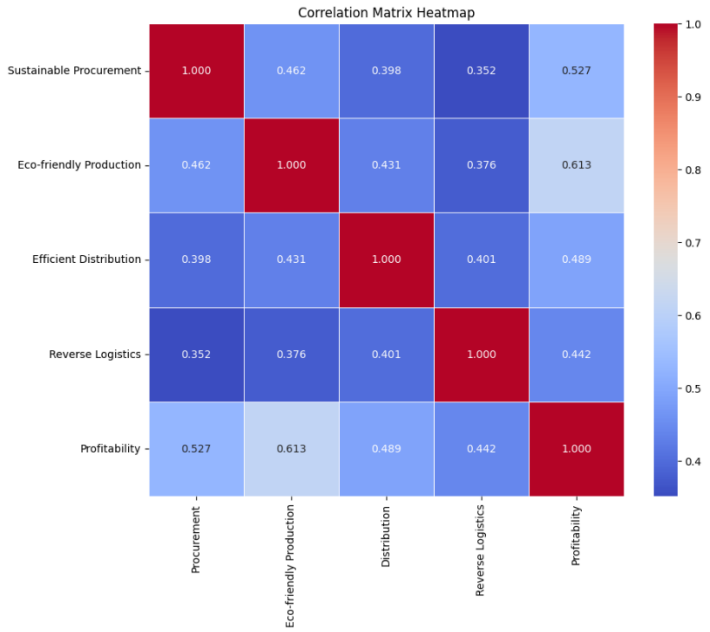

Figure 3: Correlation Matrix Heatmap of SSC Practices and Profitability

DISCUSSION

Blockchain technology and Industry 4.0 hold great potential for SSCs [5], but their practical application faces challenges such as theoretical research, lack of empirical support, and the need for advanced infrastructure and skilled staff. Measurement of social and environmental effects is challenging, and adoption is complicated by high costs, scalability issues, and security risks. Future empirical research is needed to validate and refine these insights. The research focuses on the Iranian Oil Company, limiting its applicability to other sectors or regions [7]. The Delphi technique and meta synthesis introduce subjectivity and depend on existing literature quality. The proposed indicators lack empirical support and are static, unable to adapt to changing sustainability concerns. The research also provides performance metrics without precise implementation plans and only partially accounts for stakeholder perspectives.

The profitability of the beverage manufacturing companies is considerably increased by SSC methods, according to actual data from this analysis. According to the regression results, the best predictor was eco-friendly production ($\beta = 0.241$), which was followed by sustainable procurement ($\beta = 0.198$), effective distribution ($\beta = 0.182$), and reverse logistics ($\beta = 0.143$). The research found that eco-friendly production, sustainable procurement, efficient distribution, and reverse logistics significantly improve profitability in beverage manufacturing firms, with all practices contributing significantly to their financial performance.

CONCLUSION

The profitability of beverage manufacturing companies was investigated in the research in relation to SSC practices. 112 managers and supply chain employees were asked to complete structured questionnaires as part of a quantitative research design. A total of 87 (78% of the total) valid answers were provided. The relationship between eco-friendly production, efficient distribution, reverse logistics, sustainable procurement, and profitability was tested by regression and correlation analyses using IBM SPSS. The findings showed that the following factors significantly improved profitability: sustainable

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procurement ($\beta = 0.198, p = 0.003$), efficient distribution ($\beta = 0.182, p = 0.005$), and reverse logistics ($\beta = 0.143, p = 0.037$). The results confirm their position as key drivers of financial performance and competitive advantage in beverage manufacturing by showing that eco-friendly production, efficient distribution, sustainable procurement, and reverse logistics all significantly improve profitability. The cross-sectional design, which restricts the capacity to infer causality, the research's dependence on self-reported survey data, and the relatively small sample size restricted to beverage manufacturing companies are some of its limitations. To fully comprehend the advantages of SSCM, future research should expand the sample size, incorporate diverse manufacturing sectors, use longitudinal designs, and consider customer satisfaction and regulatory compliance.

REFERENCES

1. Seuring, S., Aman, S., Hettiarachchi, B.D., de Lima, F.A., Schilling, L. and Sudusinghe, J.I., 2022. Reflecting on theory development in sustainable supply chain management. Cleaner Logistics and Supply Chain, 3, p.100016. https://doi.org/10.1016/j.clscn.2021.100016
2. Mageto, J., 2021. Big data analytics in sustainable supply chain management: A focus on manufacturing supply chains. Sustainability, 13(13), p.7101. https://doi.org/10.3390/su13137101
3. Gurzawska, A., 2020. Towards responsible and sustainable supply chains–innovation, multi-stakeholder approach and governance. Philosophy of Management, 19(3), pp.267-295. https://doi.org/10.1007/s40926-019-00114-z
4. Adams, D., Donovan, J. and Topple, C., 2023. Sustainability in large food and beverage companies and their supply chains: An investigation into key drivers and barriers affecting sustainability strategies. Business Strategy and the Environment, 32(4), pp.1451-1463. https://doi.org/10.1002/bse.3198
5. Esmaeilian, B., Sarkis, J., Lewis, K. and Behdad, S., 2020. Blockchain for the future of sustainable supply chain management in Industry 4.0. Resources, conservation and recycling, 163, p.105064. https://doi.org/10.1016/j.resconrec.2020.105064
6. Telukdarie, A., Munsamy, M. and Mohlala, P., 2020. Analysis of the Impact of COVID-19 on the Food and Beverages Manufacturing Sector. Sustainability, 12(22), p.9331. https://doi.org/10.3390/su12229331
7. Narimissa, O., Kangarani-Farahani, A. and Molla-Alizadeh-Zavardehi, S., 2020. Evaluation of sustainable supply chain management performance: Indicators. Sustainable Development, 28(1), pp.118-131. https://doi.org/10.1002/sd.1976
8. Hansen, A.D., Kuramochi, T. and Wicke, B., 2022. The status of corporate greenhouse gas emissions reporting in the food sector: An evaluation of food and beverage manufacturers. Journal of cleaner production, 361, p.132279. https://doi.org/10.1016/j.jclepro.2022.132279
9. Haekal, J., 2022. Quantitative strategic planning matrix (QSPM) in determining alternative strategies for the covid-19 epidemic in the food and beverage manufacturing companies in Indonesia. International Journal of Scientific and Applied Research (IJSAR), eISSN: 2583-*0279*, *2*(4), pp.1-10. https://doi.org/10.54756/IJSAR.2022.V2.i4.1

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