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The Influence of Sustainability Practices on Supply Chain Dynamics In Pune's Food Processing Fmcg

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KEYWORDS

Fast-moving consumer goods, Food processing sector, Supply chains, Management, Maharashtra.

ABSTRACT

Now-a-days sustainability in fast-moving consumer goods (FMCG) supply chains (SC) management is acquiring more attention. This research was attempted to analyse the supply chain management practices in the food processing FMCG sector in Pune District and their impact on organizational sustainability. The research work was conducted based on exploratory & analytical study among FMCG industries at Pune, Maharashtra, India. Questionnaire surveys, structured interviews with supply chain professionals, plant managers, logistics coordinators, and procurement heads of food processing FMCG companies were carried out and collected data is analysed s through statistical methods such as regression analysis with special reference to ANOVA. The relationship between sustainability indicators and sustainable sourcing practices, stakeholder collaboration and supply chain transparency were found to be positive and adequate.

1. INTRODUCTION

Sustainability in fast-moving consumer goods (FMCG) supply chains (SC) is acquiring more attention than ever because of the rising awareness of sustainability issues like climate change and labour rights (Prashar, 2023). A definite solution is to incorporate sustainable supply chain management (SSCM) practices overall within the upstream and downstream units of SC (Prashar, 2023).

"Food processing supply chains are often characterized by demand fluctuations and uncertainties, which can lead to inefficiencies (Chopra & Meindl, 2007). Sinha & Ubale (2020) demonstrated the value of a demand-driven approach in the automotive sector for mitigating supply chain nervousness, a concept that can be adapted to address similar challenges in the FMCG context."

For effective supply chain management, organisations need to be selected both the best set of suppliers and also need to know how much quantity should be allocated among them for generating a persistent environment of competitiveness (Costantino & Pellegrino, 2010; Deshmukh & Vasudevan, 2014).

Within an organization, such as manufacturer, the supply chain is includes all function involved in receiving and fulfilling a buyer request. These functions are new product development, marketing, operation, distribution, finance, customer service and other function that related to serving buyer request (Chopra & Meindl, 2007).

Green supply chain (GSC) is involved in sustainable environmental steps built into conventional supply chains which constitutes manufacturing to operations to end-of-life management along with incorporating the principle of 4R (reduce, reuse, recycle, reclaim) and 1D (degradable). (GEP, 2025a). Therefore, sustainable value chain management is necessary to ensure sustainability goals achievement through the business with a maximizing benefit for concerned stakeholders (GEP, 2025b). Generally, now-a-days the manufacturing units carry onboard suppliers, which have a proven track record for implementing green practices in their premises and methods, thus integrating environmental awareness as a factor or metric for supplier selection.

Sustainable supply chain management (SSCM) integrates environmental and social considerations into traditional supply chain practices (GEP, 2025a, 2025b). Lean manufacturing, focused on efficiency and waste reduction, can be a valuable tool in achieving sustainability goals. Aher, Ubale & Ubale (2025) provide an analysis of sustainable lean manufacturing implementation within the Pune region, offering relevant insights for the local food processing FMCG sector.

The food processing industry plays a crucial role in India's economical and agricultural landscape and optimizing its supply chain is essential for reducing wastage, improving efficiency, and enhancing profitability. This research focused on analysing the supply chain management practices in the food processing FMCG sector in Pune District and their impact on organizational sustainability.

2. METHODOLOGY

Study Design

This research work was conducted based on Exploratory & Analytical study.

Study area

The research work was conducted among FMCG units at Pune, Maharashtra, India.

Study population

Population constitutes FMCG units at Pune, Maharashtra, India.

Data Collection

Questionnaire surveys, structured interviews with supply chain professionals, plant managers, logistics coordinators, and procurement heads of food processing FMCG companies were carried out.

Sampling Technique

Multi-stage random sampling, covering different segments of the supply chain.

Data Analysis

Advanced data analysis was completed by using the SPSS tool (version 21). Statistical methods such as regression analysis with special reference to ANOVA was performed.

3. RESULTS AND DISCUSSION

In Table 1 and Table 2, the value of R square as obtained 0.976 and adjusted R square is 0.976 and these were observed statistically significant. In ANOVA, the F value was obtained 16536.820 between Sustainability indicators and Sustainable sourcing practices which is statistically significant (P<0.001).

Table 1: Model Summary (Dependent variable)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.988[a]	.976	.976	.15477
a. Predictors: (Constant), Sustainable sourcing practices				

Table 2: ANOVA for Sustainability indicators

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	396.103	1	396.103	16536.820	.000[b]
	Residual	9.533	398	.024		

	Total	405.636	399			
a. Dependent Variable: Sustainability indicators						
b. Predictors: (Constant), Sustainable sourcing practices						

The Table 3 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Sustainability indicators) versus predicted variable (Sustainable sourcing practices), which observed statistically significant (P<0.001).

Table 3: Model showing standardized and unstandardized coefficients of dependent variable (Sustainability indicators)

Coefficients								
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**95% CI for B**	
		B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**
1	(Constant)	.425	.023		18.55	.000	.380	.470
	Sustainable sourcing practices	.859	.007	.988	128.60	0.00	.846	.872

In Table 4 and Table 5, the value of R square as obtained 0.964 and adjusted R square is 0.964 and these were observed statistically significant. In ANOVA, the F value was obtained 10621.801 between Sustainability indicators and Stakeholder collaboration which is statistically significant (P<0.001).

Table 4: Model Summary (Dependent variable)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.982[a]	.964	.964	.19186

a. Predictors: (Constant), Stakeholder collaboration

Table 5: ANOVA for Sustainability indicators

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	390.986	1	390.986	10621.801	.000[b]
	Residual	14.650	398	.037		
	Total	405.636	399			

a. Dependent Variable: Sustainability indicators

b. Predictors: (Constant), Stakeholder collaboration

The Table 6 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Sustainability indicators) versus predicted variable (Stakeholder collaboration), which observed statistically significant (P<0.001).

Table 6: Model showing standardized and unstandardized coefficients of dependent variable (Sustainability indicators)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% CI for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.600	.027		22.26	.000	.547	.653
	Stakeholder collaboration	.829	.008	.982	103.06	.000	.814	.845
a. Dependent Variable: Sustainability indicators								

In Table 7 and Table 8, the value of R square as obtained 0.981 and adjusted R square is 0.981 and these were observed statistically significant. In ANOVA, the F value was obtained 20620.741 between Sustainability indicators and Supply Chain Transparency which is statistically significant (P<0.001).

Table 7: Model Summary (Dependent variable)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990[a]	.981	.981	.13892

a. Predictors: (Constant), Supply chain transparency

Table 8: ANOVA for Sustainability indicators

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	397.955	1	397.955	20620.741	.000[b]
	Residual	7.681	398	.019		
	Total	405.636	399			
a. Dependent Variable: Sustainability indicators						
b. Predictors: (Constant), Supply chain transparency						

The Table 9 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Sustainability indicators) versus predicted variable (Supply Chain Transparency), which observed statistically significant (P<0.001).

Table 9: Model showing standardized and unstandardized coefficients of dependent variable (Sustainability indicators)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.074	.024		-3.104	.002	-.121	-.027
	Supply chain transparency	1.034	.007	.990	143.60	0.000	1.020	1.048
a. Dependent Variable: Sustainability indicators								

In Table 10 and Table 11, the value of R square as obtained 0.950 and adjusted R square is 0.950 and these were observed statistically significant. In ANOVA, the F value was obtained 7535.365 between Operational efficiency metrics and Sustainable sourcing practices which is statistically significant (P<0.001).

Table 10: Model Summary (Dependent variable)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.975[a]	.950	.950	.23840

a. Predictors: (Constant), Sustainable sourcing practices

Table 11: ANOVA for Operational efficiency metrics

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	428.264	1	428.264	7535.365	.000[b]
	Residual	22.620	398	.057		
	Total	450.884	399			
a. Dependent Variable: Operational efficiency metrics						
b. Predictors: (Constant), Sustainable sourcing practices						

The Table 12 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Operational Efficiency Metrics) versus predicted variable (Sustainable Sourcing Practices), which observed statistically significant (P<0.001).

Table 12: Model showing standardized and unstandardized coefficients of dependent variable (Operational efficiency metrics)

Coefficients[a]								
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**95.0% Confidence Interval for B**	
		B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**
1	(Constant)	.194	.035		5.51	.000	.125	.264
	Sustainable sourcing practices	.893	.010	.975	86.81	.000	.873	.913
a. Dependent Variable: Operational efficiency metrics								

In Table 13 and Table 14, the value of R square as obtained 0.964 and adjusted R square is 0.964 and these were observed statistically significant. In ANOVA, the F value was obtained 10655.066 between Operational efficiency metrics and Stakeholder collaboration which is statistically significant (P<0.001).

Table 13: Model Summary (Dependent variable)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.982[a]	.964	.964	.20197

a. Predictors: (Constant), Stakeholder collaboration

Table 14: ANOVA for Operational efficiency metrics

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	434.649	1	434.649	10655.066	.000[b]
	Residual	16.235	398	.041		
	Total	450.884	399			
a. Dependent Variable: Operational efficiency metrics						
b. Predictors: (Constant), Stakeholder collaboration						

The Table 15 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Operational Efficiency Metrics) versus predicted variable (Stakeholder Collaboration), which observed statistically significant (P<0.001).

Table 15: Model showing standardized and unstandardized coefficients of dependent variable (Operational efficiency metrics)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.339	.028		11.94	.000	.283	.395
	Stakeholder collaboration	.874	.008	.982	103.22	.000	.858	.891
a. Dependent Variable: Operational efficiency metrics								

In Table 16 and Table 17, the value of R square as obtained 0.945 and adjusted R square is 0.945 and these were observed statistically significant. In ANOVA, the F value was obtained 6791.422 between Operational efficiency metrics and Supply chain transparency which is statistically significant (P<0.001). The Table 18 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Operational Efficiency Metrics) versus predicted variable (Supply Chain Transparency), which observed statistically significant (P<0.001).

Table 16: Model Summary (Dependent variable)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.972[a]	.945	.945	.25043

a. Predictors: (Constant), Supply chain transparency

Table 17: ANOVA for Operational efficiency metrics

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	425.923	1	425.923	6791.422	.000[b]
	Residual	24.961	398	.063		
	Total	450.884	399			
a. Dependent Variable: Operational efficiency metrics						
b. Predictors: (Constant), Supply chain transparency						

The Table 18 shows that unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Operational Efficiency Metrics) versus predicted variable (Supply Chain Transparency), which observed statistically significant (P<0.001).

Table 18: Model showing standardized and unstandardized coefficients of dependent variable (Operational efficiency metrics)

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.307	.043		-7.152	.000	-.391	-.223
	Supply chain transparency	1.070	.013	.972	82.41	.000	1.044	1.095
a. Dependent Variable: Operational efficiency metrics								

4. DISCUSSION

The association between sustainability indicators and sustainable sourcing practices, stakeholder collaboration and supply chain transparency were statistically significant (P<0.001). As per the unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (Sustainability indicators) versus predicted variables (Sustainable sourcing practices, stakeholder collaboration and supply chain transparency) were also observed statistically significant (P<0.001).

The association between operational efficiency metrics and sustainable sourcing practices, stakeholder collaboration and supply chain transparency were statistically significant (P<0.001). As per the unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (operational efficiency metrics) versus predicted variables (Sustainable sourcing practices) were also observed statistically significant (P<0.001).

The association between operational efficiency metrics and supply chain transparency were statistically significant (P<0.001). As per the unstandardised coefficients and standardised coefficients of the Regression series of the dependent variable (operational efficiency metrics) versus predicted variables (supply chain transparency) were also observed statistically significant (P<0.001).

Al Maalouf et al. (2024) reported regarding a strong positive relationship between sustainable supply chain practices and operational flexibility, goods quality, supply, and price. They also stated that due to their significant impact on operational performance, sustainable SCM practices are strongly advised for Lebanese businesses operating in the fruits and vegetables sector.

To enhance the responsiveness of food processing supply chains, incorporating demand-driven strategies may be beneficial. Sinha & Ubale (2020) found that such an approach can effectively combat nervousness in the automotive supply chain, suggesting potential for similar improvements in other sectors.

As per stakeholder theory, organizations are facing environmental stresses from multiple stakeholder groups (Freeman, 1984; Henriques & Sadorsky, 1999). Henriques & Sadorsky (1999) identified four stakeholder groups such as "regulatory stakeholders (governments, trade associations, informal networks, and competitors), organizational stakeholders (customers, suppliers, employees, and shareholders), community stakeholders (community groups, environmental organizations, and other potential lobbies), and the media".

Lai & Wong (2012) found that green logistics management (customer-oriented) improves operational performance, Zhu et al. (2007) found no significant relationship between environmental cooperation with customers and improved operational performance.

The study area, Pune, Maharashtra, has a growing manufacturing sector. As highlighted by Aher, Ubale & Ubale (2025), there is a focus on sustainable lean manufacturing practices in the region, which is relevant to the food processing industries surveyed in this research.

Some studies reported that there is an increasing trend of the pressure on the food manufacturing firms for adopting sustainable supply chains (Kamble et al., 2020), yet most of these industries are unsuccessful for implementing sustainability practices (Ghadge et al., 2020).

To achieve long-term sustainability, food processing companies should prioritize continuous improvement initiatives. Tayade, Ubale & Ubale (2023) demonstrate the effectiveness of process and operational excellence methodologies in the service industry, which can serve as a model for implementation in the FMCG sector.

5. CONCLUSION

It is concluded that the food processing FMCG sectors of Pune district are quite better for implementing supply chain management. Moreover, the relationship between sustainability indicators and sustainable sourcing practices, stakeholder collaboration and supply chain transparency were positive and adequate. This is a first-time endeavour to know SCM practice within food processing industries at Pune, India

REFERENCES

[1] Al Maalouf, N. J., Elia, J., Boutros, F., Balouza, M., & Sawaya, C. (2024). Sustainable practices and their impact on the operations of fresh fruits and vegetables market in the cold chain. Cleaner Logistics and Supply Chain, 13, 100196.

[2] Chopra, S., & Meindl, P. (2007). Supply Chain Management: Strategy, Planning, and Operations. Prentice Hall, Upper Saddle River.

[3] Costantino, N., & Pellegrino, R. (2010). Choosing between single and multiple sourcing based on supplier default risk: A real options approach. Journal of Purchasing and Supply Management, 16(1), 27-40.

[4] Sinha, A., & Ubale, S. (2020). Demand Driven Approach to Combat Nervousness of Auto Supply Chain in India. In International Conference on Industrial Engineering and Operations Management Dubai, UAE (pp. 1449-1455). IEOM Society International.

[5] Deshmukh, A. J., & Vasudevan, H. (2014). Emerging supplier selection criteria in the context of traditional vs green supply chain management. International Journal of Managing Value and Supply Chains (IJMVSC), 5(1), 19-33.

[6] Freeman, R. E. (1984). Strategic Management: A Stakeholder Approach. Pitman: Boston.

[7] GEP. (2025a). What is Green Supply Chain Management? Available from: https://www.gep.com/knowledge-bank/glossary/what-is-supply-chain-management

[8] GEP. (2025b). Supply Chain Sustainability. Available from: https://www.gep.com/info-guide/supply-chain-sustainability

[9] Aher, D. H., Ubale, P. D. S., & Ubale, S. (2025). Analysis of Sustainable Lean Manufacturing Implementation in Pune Region Manufacturing Industries. Journal of Advanced Manufacturing Systems, 24(1). https://www.worldscientific.com/doi/10.1142/S0219686725500337?srsltid=AfmBOop1pqJwiWXc_EkHx7kXYw97xNCr4JDvIZmN_Myt0nVwxh1qpjEe

[10] Ghadge, A., Kara, M. E., Mogale, D. G., Choudhary, S., & Dani, S. (2020). Sustainability implementation challenges in food supply chains: a case of UK artisan cheese producers. Production Planning & Control, 1-16.

[11] Henriques, I., & Sadorsky, P. (1999). The relationship between environmental commitment and managerial perceptions of stakeholder importance. Academy of Management Journal, 42(1), 87-99.

[12] Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2020). Achieving sustainable performance in a data-driven agriculture supply chain: a review for research and applications. International Journal of Production Economics, 219, 179-194.

[13] Lai, J., & Yang, C. (2009). Effects of employees' perceived dependability on success of enterprise applications in e-business. Industrial Marketing Management, 38, 263-274.

[14] Prashar, A. (2023). Supply chain sustainability drivers for fast-moving consumer goods (FMCG) sector: an Indian perspective. International Journal of Productivity and Performance Management, 72(8), 2397-2419.

[15] Zhu, Q., Sarkis, J., & Lai, K. (2007). Green supply chain management: process, practices and performance within the Chinese automotive industry. Journal of Cleaner Production, 15, 1041-1052.

[16] Tayade, M. D., Ubale, P. D. S., & Ubale, S. (2023). Continuous Improvement in Service Industry Using Process and Operational Excellence Methodologies. IUP Journal of Operations Management, 22(1). https://www.iupindia.in/0223/Operations%20Management/Operations_Management.asp?mag=https://www.iupindia.in/0223/Operations%20Management/Operations_Management_sub.asp .

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