



A Study on Effect of Supply Chain Management Practices on Profitability of Dairy Retailers in Erode District

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Abstract

The study analyses the effect of supply chain management practices on profitability of dairy retailers in Erode district. The study aims to recognize how supply chain management strategies influence business performance and how socio-economic characteristics form adoption of such practices. The study used a sample of 400 dairy retailers with the use of convenience sampling, and structured questionnaire is used to collect data from the respondents. The socioeconomic profile was examined using a simple percentage analysis. Factor analysis confirms that five elements of supply chain management practices that have a big influence on profitability dairy retail business. These elements have a significant impact on business performance, according to multiple regression research, with demand forecasting and technology integration having the biggest effects. One-way ANOVA shows that the adoption of supply chain techniques is influenced by differences in gender, income, education, work hours, and business location. Results indicate that improving profitability in the dairy retail industry requires focused supply chain strategies and socioeconomic disparity consideration.

Key Words: Dairy Business, Retailers, Supply Chain Management, Profitability, Quality.

1. Introduction

The dairy industry plays main role in the livelihood of millions of small and medium-sized retail shops. The need for effective supply chain management in dairy retailing is becoming more and more apparent as the market for milk and milk-based products keeps expanding. The last link in the dairy supply chain that connects producers and consumers is the dairy store. In this context, efficient supply chain procedures encourage increased profitability, minimize losses, and guarantee the timely availability of fresh, premium dairy products. Dairy retailers are under pressure to enhance operational effectiveness and service delivery while handling perishable goods with a short shelf life due to growing consumer expectations and competition. In addition to assisting in overcoming these obstacles, the implementation of suitable supply chain management techniques raises the general profitability and sustainability of dairy retail businesses. Milk collection, storing, packing, transportation, inventory control, delivery scheduling, demand forecasting, quality compliance, and technology integration are just a few of the interrelated tasks that make up supply chain management in the dairy sector. These procedures are essential for preserving product freshness, cutting down on waste, and guaranteeing customer happiness (Hani, 2022). Supply chain management plays a vital strategic role in an industry where even little inefficiencies can result in large losses, particularly because dairy products are perishable. Retailers may lower expenses, increase product turnover, and boost profit margins by

successfully putting these strategies into operation. On the other hand, poor logistics, antiquated technology, or a lack of coordination can hurt the bottom line and result in unhappy customers.

In addition to internal operating procedures, external factors including consumer demand, supplier availability, and the retailer's socioeconomic profile also have an impact on profitability in the dairy retail industry. Retailers who have access to modern facilities, higher incomes, and more knowledge are frequently in a better position to embrace and profit from advanced supply chain strategies. Effective supply management is also influenced by the retailer's exposure to digital technology, working hours, and business location. As a result, research into the ways that supply chain strategies and the socioeconomic traits of dairy merchants interact to impact overall business performance is required. Although there are still issues at the retail level, the Indian dairy supply chain has undergone tremendous change. Lack of cold storage, erratic supply schedules, expensive transportation, delayed deliveries, restricted access to technology, and erratic demand patterns are just a few of the problems that retailers frequently deal with. These problems affect profitability by raising operating costs and lowering product quality. Dairy retailers can get around some of these restrictions by concentrating on improving areas like supplier cooperation, sales forecasting, inventory and delivery efficiency, and adherence to food safety laws. Retail efficiency has gained a new dimension in recent years due to the incorporation of technology such as digital inventory systems, online order tracking, and mobile payment possibilities. Businesses that use these innovations typically see increases in consumer loyalty and performance (Shekarian et al., 2022)

Determination of the main areas where interventions can be made requires realization of how supply chain management techniques affect profitability. It makes it possible for stakeholders in the dairy industry, including business owners and legislators, to better assist retail operations. The primary goal of this study is to determine which supply chain management strategies have the most effects on profitability and how these strategies differ depending on the socioeconomic status of retailers. The project evaluates how the practical application of supply chain techniques results in financial gains by gathering and scrutinizing data on the experiences of dairy retailers in real time. Effective inventory control, for instance, guarantees that perishable dairy items are kept in stock and sold on schedule, preventing spoiling. Coordinating logistics with suppliers ensures a consistent supply of goods. As a result of matching inventory to customer demand, sales forecasting helps prevent overstocking or shortage of stocks (Mogale et al., 2023). Though quality compliance preserves brand integrity and consumer trust, technological adoption allows for speedier service and more seamless communication. Once combined, these strategies support profitability and operational success in a cutthroat retail setting. Recognition of these aspects aids in determining how applicable supply chain management practices are in the real world and how much of an impact they have on profitability.

Dairy Industry: The dairy industry in Tamil Nadu is well-established, and both private and cooperative dairy businesses contribute significantly to the production, delivery, and processing of milk. The largest dairy cooperative in the state is the Tamil Nadu Cooperative Milk Producers' Federation Limited, or Aavin. The Tamil Nadu government oversees it and it runs under the Aavin. Through primary milk societies, Aavin procures milk from farmers and provides consumers throughout the state with a range of dairy products, such as milk, curd, ghee, butter, and flavoured milk. Aavin is not the only private dairy company that is working in Tamil Nadu. Among these are Heritage Foods, Dodla Dairy, Milky Mist, Cavinkare, Arun Ice Creams, and Hatsun Agro Product Ltd., (Arokya brand). These firms have made investments in logistics, cold storage, and processing facilities to support their operations and guarantee the prompt delivery of fresh dairy products. Erode district makes a substantial contribution to milk production being a major hub for agricultural and cow rearing. Aavin and other private dairies have collecting centres and chilling facilities throughout the district. Businesses that assist local employment and market supply include Milky Mist, which has production facilities in the area and is well-known for its value-added dairy products.

2. Statement of the Problem

The dairy products are perishable, demand fluctuates often, and operating expenses are rising, dairy retailers are finding it more and more difficult to properly manage their supply chains. Waste, shortages, and unhappy customers are frequently the results of poor coordination in areas including inventory management, delivery planning, and supplier involvement. Advanced supply chain systems are advantageous to many large-scale businesses, but small and medium-sized dairy shops, sometimes lack organized methods to handle these important tasks. The profitability is consequently directly impacted. Further strain is also added by shifting consumer demands, market competitiveness, and transportation expenses. Additionally, little is known about

how socioeconomic variables like income, education, and company location affect dairy retailers' adoption of supply chain methods. Efforts to enhance retail performance could not be successful if it is unclear which supply chain practices influence profitability and how retailer profiles impact them. Therefore, in order to make effective business decisions in the dairy retail industry, it is important to determine the relationship between supply chain management methods and profitability.

3. Need for the Study

The retail dairy industry is important to guaranteeing that consumers receive necessary nutritional products on schedule. For dairy retailers, effective supply chain management is now more important than ever due to the rising demand for quality and freshness. Realization of the relationship between supply chain practices and business performance is important in rural and hills based districts like Erode District, where dairy companies make a substantial economic contribution to the community. Numerous small retailers continue to function without formalized plans, which results in preventable losses, inefficiencies, and disgruntled customers. A focus on the effects of efficient inventories, logistics, forecasting, technology utilization, and quality control procedures on profitability is urgently needed. Realization of retailers' socioeconomic backgrounds affect their capacity to successfully adopt and apply such methods is another important aspect. The results can assist dairy merchants in enhancing operations and maintaining their competitiveness by highlighting important elements that affect supply chain profitability and efficiency. The study offered a useful foundation for creating strategies that are suited to regional requirements and the resources that are available in the dairy retail sector.

4. Review of Literature

A healthy supply chain is essential to the profitability of dairy retailers, because it links the activities of procurement, processing, distribution, and delivery. Since milk and dairy products are perishable, effective supply chain management is important in the dairy industry (Chemirmir and Ndeto, 2021). Dairy retailers benefit monetarily from a robust supply chain because it guarantees the timely flow of goods, minimizes waste, preserves product quality, and meets consumer demand (Pacarada et al., 2024). For dairy companies to grow, efficient delivery and inventory management solutions are essential. Profitability can be directly impacted by spoiling and customer dissatisfaction caused by improper handling or delayed delivery (Panle et al., 2024). Demand forecasting and real-time stock monitoring are two examples of effective inventory management techniques that reduce storage losses and guarantee that supply keeps pace with market demand. The operational effectiveness of dairy retailers is frequently enhanced by the implementation of digital inventory systems and well-planned supply schedules (Srivastava and Barathwal, 2022).

Coordinated transport systems, route optimization, and reliable cold storage networks reduce delivery time and help maintain freshness, which increases customer loyalty and repeat sales. Retailers that collaborate effectively with suppliers and logistics service providers tend to achieve lower operational costs and better market penetration (Shingh et al., 2020). Trust and transparency in supplier relationships further enhance supply reliability, which is key in managing customer expectations. Demand and sales forecasting is a strategic element in supply chain planning for dairy retailers (Kanna and Amudha, 2022). Prediction of consumer demand based on historical data, seasonal changes, and consumption patterns allows retailers to maintain appropriate inventory levels. Accurate forecasting supports better procurement planning and enhances service levels, contributing to increased profitability (Mangla et al., 2019). Retailers can track deliveries, keep an eye on storage conditions, and evaluate supplier performance with the use of technological integration through the use of mobile apps, cloud-based platforms, and automated systems. These developments facilitate well-informed decision-making and lower manual mistake rates (Chemirmir and Ndeto, 2021).

Higher technology adoption levels put retailers in a better position to meet customer expectations and react to changes in the market, both of which improve their financial performance (Ferreira et al., 2020). In the dairy supply chain, compliance and quality assurance are equally important. Consumer trust is increased and brand reputation is safeguarded by upholding hygienic standards, appropriate labelling, and compliance with food safety laws. In addition to causing legal issues, poor quality also causes a company to lose customer base (Azizsafaei et al. 2022). Consequently, procedures that put a high priority on product uniformity and safety typically result in higher long-term profitability. The ability of retailers to match supply chain procedures with consumer demands has an impact on their profitability as well (Sale et al., 2021). Adaptable purchasing, personalized packing, and prompt delivery enhance client satisfaction and boost revenue. Retailers

who consistently spend in enhancing their supply chain procedures are more financially successful and robust to disturbances, according to studies (Ding et al., 2019).

5. Research Objectives

The study commenced with the following objectives.

1. To assess the socio-economic profile of retailers in dairy business.
2. To evaluate the effect of supply chain management practices on profitability of dairy retailers.
3. To analyse the effect of socio-economic profile of retailers on supply chain management practices.

6. Research Methodology

The present study examines the effect of supply chain management strategies towards dairy retailers' in Erode district. It explores the socioeconomic profile of dairy retailers, assesses the impact of supply chain management strategies on their profitability, and explores the ways in which socioeconomic characteristics impact the adoption of supply chain practices are the three main goals of the study. Convenience sampling was used to choose a sample size of 400 dairy stores, it makes accessible and useful data collection. A structured questionnaire, which covers important study variables is used to collect data. Simple percentage analysis is used to analyze socio-economic profile in the acquired data, and factor analysis is used to identify important supply chain practice components, which effect on profitability of dairy retail business. The use of multiple regression analysis, the effect of these activities on profitability is also examined. The impact of socioeconomic characteristics on supply chain tactics among the chosen respondents is also tested using a one-way ANOVA.

7. Results and Discussion

7.1. Analysis of Socio-Economic Profile of Dairy Retailers

Simple percentage analysis has been utilized to analyse the socio-economic profile of dairy retailers. It is presented in detail in the table-1.

Table 1: Analysis of Socio-Economic Profile

Socio-Economic Profile	Characteristics	Number	Percentage
Gender	Male	232	58.00%
	Female	168	42.00%
Age	Less than 25 years	55	13.75%
	26 – 35 years	99	24.75%
	36 – 50 years	107	26.75%
	More than 50 years	139	34.75%
Educational Qualification	Illiterate	79	19.75%
	Up to SSLC	87	21.75%
	HSC/Diploma	102	25.50%
	Degree	132	33.00%
Marital Status	Married	311	77.75%
	Unmarried	89	22.25%
Monthly Income	Less than Rs.10,000	96	24.00%
	Rs.10,000 – 15,000	101	25.25%
	Rs.15,001 – 20,000	140	35.00%
	More than Rs.20,000	63	15.75%
Work Time	Less than 5 hours	121	30.25%
	5 - 10 hours	94	23.50%
	More than 12 hours	185	46.25%
Location of Business	Rural	122	30.50%
	Semi-Urban	131	32.75%
	Urban	147	36.75%

Source: Primary Data

Table 1 reveals that the socioeconomic profile of dairy retailers, which show notable variation in a number of categories. In gender category, male retailers make up a larger percentage of the membership (58%) than female retailers (42%). Age distribution shows that the largest group (34.75%) is over 50 years, followed by those between the ages of 36 and 50 years (26.75%) and 26 and 35 years (24.75%), with a smaller number (13.75%) under 25 years. Educational qualification shows that 25.5% of retailers have finished HSC or diploma programs, and 33% of retailers hold a degree, the diverse educational backgrounds are shown by the noteworthy 21.75% of retailers have completed SSLC and the 19.75% of retailers are illiterate. The majority of retailers (77.75%) are married, while the remaining retailers are unmarried. In terms of monthly income, 25.25% of retailers make income through dairy business between Rs.10,000 and Rs.15,000, while 35% of retailers make between Rs.15,001 and Rs.20,000, 15.75% of retailers report earnings over Rs.20,000, while almost 24% of retailers earn less than Rs.10,000. In terms of working hours, 46.25% of retailers put in more than 12 hours a day, which indicates a high degree of engagement, 23.5% of retailers are working 5 – 10 hours a day, and 30.25% of retailers are working up to 5 hours per day. Members are distributed almost evenly among metropolitan (36.75%), semi-urban (32.75%), and rural (30.5%) business locations. All things considered, the data shows that dairy retailers socio-economic varied by gender, age, income, education, work time and location.

7.2. Effect of Supply Chain Management Practices on Profitability of Dairy Retailers

The way that different supply chain operations affect the financial performance of dairy companies. These aspects may have connected with technology, delivery, demand forecasting, inventory, and supply. Effective application of these procedures lowers expenses, prevents delays, increases product availability, and improves service quality. Good supply chain procedures immediately increase customer satisfaction and sales for dairy businesses, where prompt delivery and product freshness are important. Superior profit margins and the viability of the company are thus the results of increased operational efficiency brought about by efficient supply chain tactics.

Factor Analysis: Bartlett's test of sphericity and the KMO measure of sample adequacy are used to assess the validity and reliability of data.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.858
Bartlett's Test of Sphericity	Approx. Chi-Square	9466.718
	df	100
	Sig.	.000

Source: Primary Data

Table 2 shows that Factor analysis is used to prove construct validity. The factors found are ideal for factor analysis, as indicated by the KMO value of sampling adequacy of 0.858. Bartlett's test of sphericity ($p < 0.000$) is significant at the 5% level based on the computed chi-square test at 100 degrees of freedom, which is 9466.718.

Table 3: Communalities

	Initial	Extraction
Seasonal demand prediction	1.000	.904
On-time product delivery	1.000	.677
Real-time inventory tracking	1.000	.683
Order fulfillment accuracy	1.000	.787
Cold chain consistency	1.000	.596
Reduced stock shortages	1.000	.572
Sales trend alignment	1.000	.554
Digital order processing	1.000	.692
Automated warehouse systems	1.000	.758
Supplier relationship strength	1.000	.638
Transportation route optimization	1.000	.733
Freight cost control	1.000	.696

Delivery frequency scheduling	1.000	.713
Packaging and handling quality	1.000	.632
Risk mitigation strategies	1.000	.533
Internet of Things in product tracking	1.000	.518
Product freshness control	1.000	.766
Regulatory compliance support	1.000	.792
Quality inspection accuracy	1.000	.746
Forecast-driven replenishment	1.000	.889
Extraction Method: Principal Component Analysis.		

Source: Primary Data

Table 3 reveals that communality offers the percentage of variance explained by the factors and aids in determining the amount of variance that one variable shares with other variables in a sequential manner. It shows that 52% of dairy supply chain practices for internet of things in product tracking are explained by the components that were extracted, compared to higher value of 90% for seasonal demand prediction.

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.596	32.979	32.979	6.596	32.979	32.979	3.319	16.597	16.597
2	2.739	13.694	46.673	2.739	13.694	46.673	3.140	15.698	32.295
3	2.011	10.055	56.727	2.011	10.055	56.727	2.736	13.681	45.976
4	1.410	7.052	63.779	1.410	7.052	63.779	2.301	11.503	57.480
5	1.027	5.133	68.912	1.027	5.133	68.912	2.287	11.433	68.912
6	.901	4.506	73.419						
7	.675	3.373	76.792						
8	.614	3.070	79.862						
9	.525	2.624	82.487						
10	.455	2.274	84.760						
11	.442	2.210	86.970						
12	.429	2.146	89.117						
13	.394	1.969	91.086						
14	.369	1.845	92.931						
15	.340	1.699	94.630						
16	.323	1.613	96.243						
17	.302	1.510	97.753						
18	.227	1.136	98.889						
19	.203	1.013	99.902						
20	.020	.098	100.000						
Extraction Method: Principal Component Analysis.									

Source: Primary Data

Table 4 reveals that the first five components account for 68.912% of the overall variance. After rotation, there is no change. Additionally, when principal components are extracted, the calculated Eigen values will be same. Eigen values greater than 1 were obtained for the first four components (6.596, 2.739, 2.011, 1.410, and 1.027).

Table 5: Component Matrix^a

	Component				
	1	2	3	4	5
Seasonal demand prediction	.662	.404	-.169	-.523	.031
On-time product delivery	.604	.202	-.322	.409	.023
Real-time inventory tracking	.650	.422	-.239	.159	.022
Order fulfillment accuracy	.608	.234	-.233	.551	-.071
Cold chain consistency	.587	.337	-.246	.263	.092
Reduced stock shortages	.645	.261	-.186	.219	.072
Sales trend alignment	.554	.263	-.082	-.414	-.008
Digital order processing	.548	-.314	.257	.064	.473
Automated warehouse systems	.576	-.433	.209	-.032	.442
Supplier relationship strength	.657	-.433	.134	.046	-.004
Transportation route optimization	.792	-.322	-.010	-.032	-.011
Freight cost control	.715	-.355	.060	-.091	-.217
Delivery frequency scheduling	.735	-.317	.067	-.074	-.249
Packaging and handling quality	.688	-.286	.028	-.069	-.268
Risk mitigation strategies	.307	-.363	.272	.124	-.466
Internet of Things in product tracking	.194	-.510	-.041	-.018	.344
Product freshness control	.331	.333	.706	.054	-.208
Regulatory compliance support	.260	.371	.751	.079	.125
Quality inspection accuracy	.126	.601	.595	.074	.100
Forecast-driven replenishment	.629	.403	-.187	-.544	.030
Extraction Method: Principal Component Analysis.					
a. 5 components extracted.					

Source: Primary Data

Table 5 discloses that the component matrix values, which are the outcome of the Varimax with Kaiser Normalisation technique. Data is extracted using principal component analysis. Finding the variable with a high loading value on the same factors leads to interpretation. Consequently, factor loading greater than 0.5 is taken into account.

Table 6: Rotated Component Matrix^a

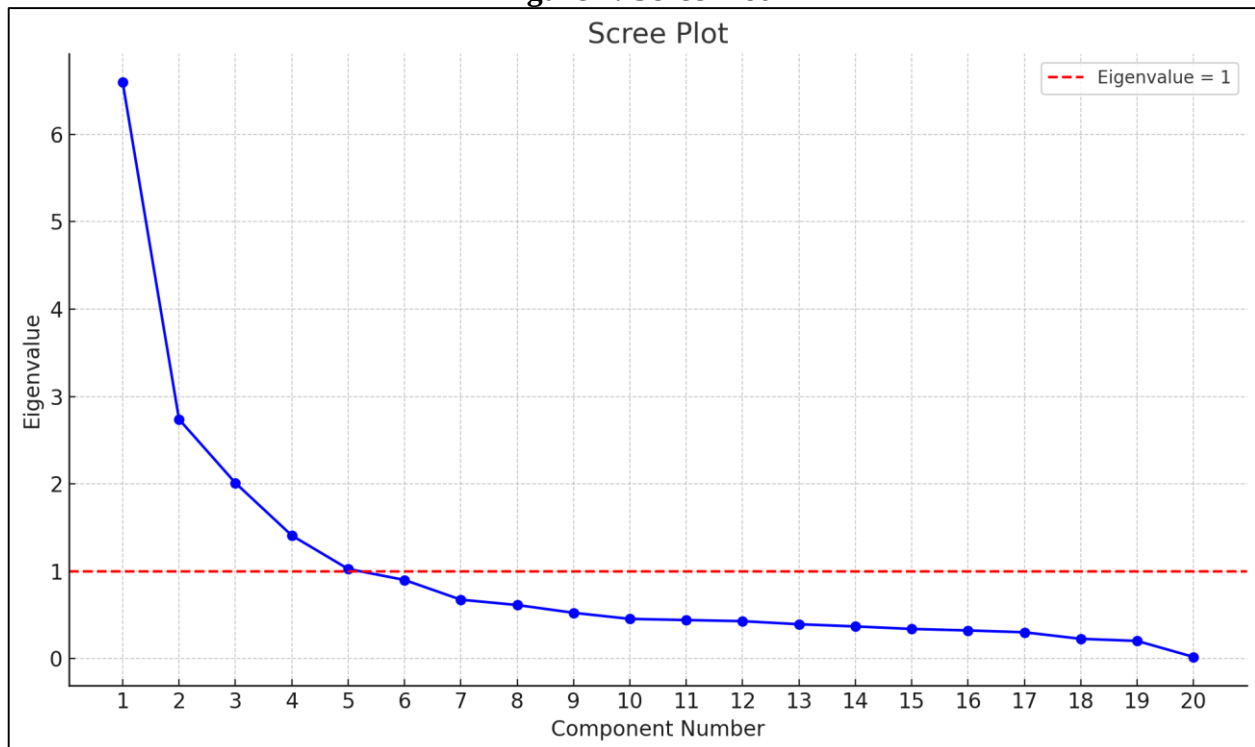
	Component				
	1	2	3	4	5
On-time product delivery	.797	.149	.105	.086	-.038
Real-time inventory tracking	.716	.084	.386	.009	.118
Order fulfillment accuracy	.859	.212	-.014	.016	.067
Cold chain consistency	.721	.044	.249	.079	.075
Reduced stock shortages	.673	.139	.269	.135	.094
Supplier relationship strength	.183	.600	.079	.488	.021
Transportation route optimization	.308	.597	.273	.454	-.037
Freight cost control	.175	.719	.244	.298	-.018
Delivery frequency scheduling	.206	.733	.251	.264	.010
Packaging and handling quality	.209	.696	.244	.209	-.016
Risk mitigation strategies	-.022	.701	-.171	-.006	.109
Seasonal demand prediction	.265	.114	.900	.048	.098
Sales trend alignment	.183	.165	.693	.062	.099
Forecast-driven replenishment	.240	.094	.904	.031	.074
Digital order processing	.159	.196	.061	.769	.182
Automated warehouse systems	.087	.282	.112	.808	.077
Internet of Things in product tracking	-.055	.126	-.062	.583	-.237
Product freshness control	.053	.288	.085	-.072	.817
Regulatory compliance support	.046	.023	.056	.141	.875
Quality inspection accuracy	.113	-.178	.114	-.071	.827

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Source: Primary Data

Table 6 shows that factor 1, which is titled ‘Inventory and Delivery Efficiency’ and has four variables loaded into it, explains 32.979% of the variance in data. Factor 2, known as ‘Supplier and Logistics Management,’ which has six variables loaded into it, explains 13.694% of the variance. Factor 3, named as ‘Demand and Sales Forecasting,’ is made up of three factors and explains 10.055 percent of the variance. Factor 4, called as ‘Technological Integration and Innovation,’ is made up of three factors and explains 7.052 percent of the variance. Three factors make up Factor 5, which is titled ‘Quality and Compliance Assurance’ and accounts for 5.133% of the variance. Therefore, factor analysis explains 68.912% of the variance in data by simplifying these 20 variables into 5 components. The Scree plot for the Eigenvalues are depicted below.

Figure 1: Scree Plot



Source: Primary Data

Figure 1 illustrates the eigenvalues of each primary component, to decide how many components to retain. Higher eigenvalues suggest that they explain a greater amount of the data’s variation. Following the first few components, there is a steep descent, which is followed by a slow decline that forms an elbow. The ideal number of parts to keep is typically indicated by this elbow. The dashed line at Eigen value equal to one helps to identify the variables that have Eigenvalues more than one. The eigenvalues of the first five components in this plot are larger than 1, shows that they play a substantial role in explaining the variance of the data. As a result, keeping these five elements such as, inventory and delivery efficiency, supplier and logistics management, demand and sales forecasting, technological integration and innovation, and quality and compliance have higher impact of profitability of retail dairy business.

The association between dairy supply chain practices and profitability of retailers is analyzed with the help of multiple regression analysis. The dairy supply chain management practices are assumed as independent variables and profitability of retailers is assumed as dependent variables, the results are illustrated in table 7.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	S.E.			
(Constant)	12.992	1.452		7.321	.000
Inventory and Delivery Efficiency	4.999	.897	.274	5.806	.000
Supplier and Logistics Management	6.051	1.165	.194	5.053	.000
Demand and Sales Forecasting	7.833	1.530	.487	7.696	.000
Technological Integration and Innovation	4.978	1.552	.324	5.432	.000
Quality and Compliance	3.993	1.192	.153	5.030	.000
R = 0.961					
R Square = 0.923					
Adjusted R Square = 0.922					
SE of the Estimate = 17.11971					
F = 104.364 (p = 0.000)					

Source: Primary Data

Table 7 shows that the independent variables such as, inventory and delivery efficiency, supplier and logistics management, demand and sales forecasting, technological integration and innovation, and quality and compliance have significant influence on profitability of retailers in dairy business, the p-values are less than 0.05. The R value of 0.961 and R Square value of 0.923 confirms that 92.3% of the variance in profitability explained the independent variables, it proves strong model it. Demand and sales forecasting has the highest standardized coefficient ($\beta = 0.487$) of all the factors, indicating the most beneficial influence. It is followed by technical integration and innovation ($\beta = 0.324$), it shows that greater technological integration could be linked to an increase in the dependent outcome. Quality and compliance, supplier and logistics management, and inventory and delivery efficiency also have a favourable impact with moderate effect sizes. The overall statistical significance of the model is confirmed by the F-value of 104.364 at a significance level of 0.000. The results prove that logistics and forecasting are important for the success of dairy retailer business.

7.3. Effect of Socio-Economic Profile on Supply Chain Management Practices

The effect of socio-economic profile of dairy retailers on supply chain management practices are investigated using one-way ANOVA. The hypothesis (H_0) reveals that socio-economic profile of dairy retailers don't have significant variation on supply chain management practices. The supply chain management practices identified in factor analysis such as, inventory and delivery efficiency, supplier and logistics management, demand and sales forecasting, technological integration and innovation, and quality and compliance are utilized and results furnished in table 8.

Table 8: One-Way ANOVA

Supply Chain Management Practices	Gender	Age	Educational Qualification	Marital Status	Monthly Income	Work Time	Location of Business
Inventory and delivery efficiency	7.505 (0.000)***	8.842 (0.000)***	9.561 (0.000)***	11.951 (0.000)***	14.578 (0.000)***	12.951 (0.000)***	13.842 (0.000)***
Supplier and logistics management	10.035 (0.000)***	7.634 (0.000)***	13.674 (0.000)***	18.119 (0.000)***	12.644 (0.000)***	3.854 (0.022)**	9.982 (0.000)***
Demand and sales forecasting	11.486 (0.000)***	4.279 (0.014)**	7.167 (0.000)***	4.105 (0.017)***	8.962 (0.000)***	3.662 (0.025)**	10.387 (0.000)***
Technological integration and innovation	3.812 (0.023)**	11.387 (0.000)***	8.488 (0.000)***	7.679 (0.000)***	12.354 (0.000)***	13.255 (0.000)***	4.525 (0.011)**
Quality and compliance	4.124 (0.017)**	12.561 (0.000)***	12.829 (0.000)***	13.567 (0.000)***	9.257 (0.000)***	10.284 (0.000)***	11.545 (0.000)***

*** Significant at 1%, ** Significant at 5%.

Table 8 shows that all dimensions of supply chain management practices have significant effect on socio-economic profile of dairy retailers. The dimensions such as inventory and delivery efficiency, supplier and logistics management, demand and sales forecasting, technological integration and innovation, and quality and compliance demonstrates statistically significant variations across gender, age, educational qualification, marital status, monthly income, work time, and business location. Results recorded p-values lower than 0.05 for all variables, which confirms strong associations. Therefore, null hypothesis failed to confirm, but hypothesis confirmed that socio-economic profile of dairy retailers has significant variation on supply chain management practices. It displays that the variations in socio-economic profile form how retailers in dairy business towards supply chain management practices of dairy companies. It demonstrates that the retailers with higher income and education appear to adopt more effective and advanced practices. Moreover, urban retailers and retailers engaged with long working hours are more likely to integrate technology and ensure better quality compliance. Results proved that socio-economic profile have intensive role in supply chain effectiveness in the dairy retail business.

8. Conclusion

The analysis reveals that dairy retailers are a socioeconomically varied group, with considerable variations across important demographic and economic parameters. A wide range of backgrounds are reflected in the differences in gender, age, education, income, length of employment, and company location, indicating the necessity for specialized approaches to managing and assisting this retail market. The results demonstrate a strong and favourable correlation between dairy merchants' profitability and supply chain management strategies. Five main factors that largely explain the diversity in profitability were identified by factor analysis such as, inventory and delivery efficiency, supplier and logistics management, demand and sales forecasting, technological integration and innovation, and quality and compliance. The link is confirmed by the regression model; a high R Square value advocates that these factors account for the majority of the variation in profitability. The significance in improving performance is confirmed by the fact that demand and sales forecasting has the most influence among them, followed by technological innovation. Furthermore, the ANOVA test emphasizes how socioeconomic factors significantly influence these activities. Gender, age, education, income, job hours, and geography all show different trends. Although metropolitan shops and those that work longer hours adopt better technology and quality procedures, higher wealth and education levels are linked to more sophisticated and efficient supply chain tactics. The success and efficacy of dairy retail operations are determined by these factors taken together.

9. Research Implications

The study divulges the significance of effective supply chain procedures in raising profitability and has important ramifications for dairy retailers in Erode District. Better forecasting, technology use, supplier collaboration, and inventory control can all help retailers achieve better business results. Results highlight how socioeconomic factors influence the adoption of these practices, directing stakeholders to create support initiatives that are specific to the needs of various merchant types. The information can be used by policymakers and dairy companies to support infrastructural support and capacity-building programs. The study offered a useful foundation for enhancing operational effectiveness and maintaining development in the cutthroat retail dairy industry.

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