



An Analysis on the Transparency and Traceability of Supply Chain in Aavin Milk Union Tirunelveli

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ABSTRACT: The dairy industry in India, an integral part of the global food supply chain, is undergoing transformative changes to address the challenges posed by globalization, technological advancements, and changing consumer expectations. Central to addressing these challenges are the concepts of transparency and traceability, which are essential for ensuring the sustainability, safety, and equity of food supply chains. This paper explores the pivotal roles of transparency and traceability within the Indian dairy industry. Transparency, defined as the clear and open disclosure of information concerning production and distribution practices, and traceability, the ability to track the flow of goods from origin to consumer, are examined in the context of their impact on consumer trust and operational efficiency. The discussion highlights the current state of these practices within the industry, identifies the gaps and challenges in their implementation, and proposes strategic solutions that could enhance the efficacy of the dairy supply chain. By improving transparency and traceability, the dairy industry in India can ensure higher product quality, improve consumer confidence, and achieve a more sustainable and fair distribution of value across the supply chain. This study aims to provide a comprehensive analysis of these critical factors and offer actionable insights for industry stakeholders.

Keywords: Dairy Industry, Supply Chain Management, Transparency, Traceability, Consumer

I. INTRODUCTION:

In the vast and intricate world of food supply chains, the dairy industry in India stands as a testament to persistent development and innovation. However, amidst the waves of globalization, rapid technological advancements, and increasing consumer demands for safety and

quality, the industry faces significant challenges. These challenges are not unique to India; they resonate across the global food processing sector, pushing for a reinvention of supply chain management strategies. Among the most critical elements in this evolution are the concepts of transparency and traceability. These concepts not only enhance operational efficiency but also build consumer trust and ensure the sustainability of food sources. This article delves into the vital roles of transparency and traceability in the dairy industry, emphasizing their importance in ensuring that the journey from farm to table is responsible, sustainable, and equitable. Through examining these concepts, we explore how the Indian dairy sector can refine its practices to meet both the current and future demands of a rapidly growing consumer base.

II. LITRATURE REVIEW:

Karpagam t and navaveetha kumar (2014), performance indicators shows the penetration of new technology renewal of infrastructure, changes in work and employment in all these areas the management of aavin fails to see changes in the light of external conditions, the sustainability of aavin not up to the mark, form this we could come to understand that the current supply chain structure is not to the standards and there is lot of ways to increase the profit of the organization by promoting the standard practice

christopher brewster and tim jackson (2010) "the role of traceability in sustainable supply chain management" by brewster and jackson discuss the importance of traceability within sustainable supply chain management. They argue that traceability not only enhances transparency and accountability but also contributes to the social, environmental, and economic sustainability of supply chains. The article explores how traceability can help



organizations identify and mitigate risks, improve product quality, and build trust with stakeholders.

Pramod and raja sekhar (2011) discussed about the various risks and uncertainties from a dairy industry perspective and their impact at various stages of the supply chain. The study concluded that the vulnerabilities in terms of risk and uncertainties get multiplied with the perishability nature of the raw material that is milk which the industry deals in.

STATEMENT OF PROBLEM

The Indian dairy industry faces significant challenges in enhancing transparency and traceability within its supply chain. These challenges stem from rapid globalization, technological changes, and increasing consumer demands for food safety and quality. There is a notable lack of integrated traceability systems and transparent communication, which undermines consumer confidence and supply chain sustainability. The industry struggles with efficiently tracking product origins and distribution pathways, crucial for quality control and food safety responses. This statement addresses the need for effective strategies to improve these aspects, ensuring a sustainable and reliable dairy supply chain.

OBJECTIVES

- Evaluate the existing traceability mechanisms employed by aavin milk union across its supply chain.
- Identify challenges and barriers hindering the implementation of effective traceability and transparency measures within Aavin's supply chain.
- To identify the issues faced by the retail outlets and agents in distribution of milk products

III. RESEARCH METHODOLOGY

The research methodology adopted for this study was primarily descriptive, aiming to offer a detailed, accurate, and succinct depiction of transparency and traceability within the dairy supply chain of the Aavin Milk Union. To gather the requisite data, primary data sources were utilized. Primary data were collected through structured interviews with key stakeholders in the supply chain retailers, and Agents. These interviews were designed to capture in-depth insights into the stakeholders' experiences, perspectives, and challenges. The interviews comprised both open-ended questions, allowing respondents to share their thoughts and provide

detailed information beyond the scope of the questionnaire, and closed-ended questions, which included multiple choice, dichotomous, and ranking questions, along with a rating scale.

The study was geographically focused on the taluks of Tirunelveli and Palayamkottai, with the fieldwork conducted over a period of three months. A multi-stage technique was employed to select participants, ensuring that the sample was representative of various roles within the supply chain. The chosen sample size was 52 respondents, calculated to achieve a 95% confidence level with a 5% margin of error. This comprehensive approach provided a robust framework for understanding the current state of transparency and traceability in the dairy supply chain and offered informed recommendations for improvements.

METHOD OF COLLECTION

Primary data:

Primary data are unique and recently gathered by the researcher. Primary data for this study were gathered via questionnaires. Using a questionnaire is a common way to get primary data. A list of questions for oneself is called a questionnaire.

The commonly used statistical tools for analysis of collected data are:

- Percentage analysis
- Correlation analysis
- Regression analysis

PERCENTAGE ANALYSIS

Percentage refers to a special kind of ratio. Percentage is used in making comparison between two or more series of data. Percentage is used to describe relationship. Percentage can also use to compare the relationship.

CORRELATION ANALYSIS

There are several different correlation techniques. The survey systems optional statistics module includes the most common type, called the person or product moment correlation. The module also includes a variation on this type called partial correlation. The latter is useful when you want to look at the relationship between two variables while removing the effect of none or two other variables

REGRESSION ANALYSIS

a statistical technique that relates a dependent variable to one or more independent (explanatory) variables. A regression model is able to show whether changes observed in the dependent



variable are associated with changes in one or more of the explanatory variables.

LIMITATIONS

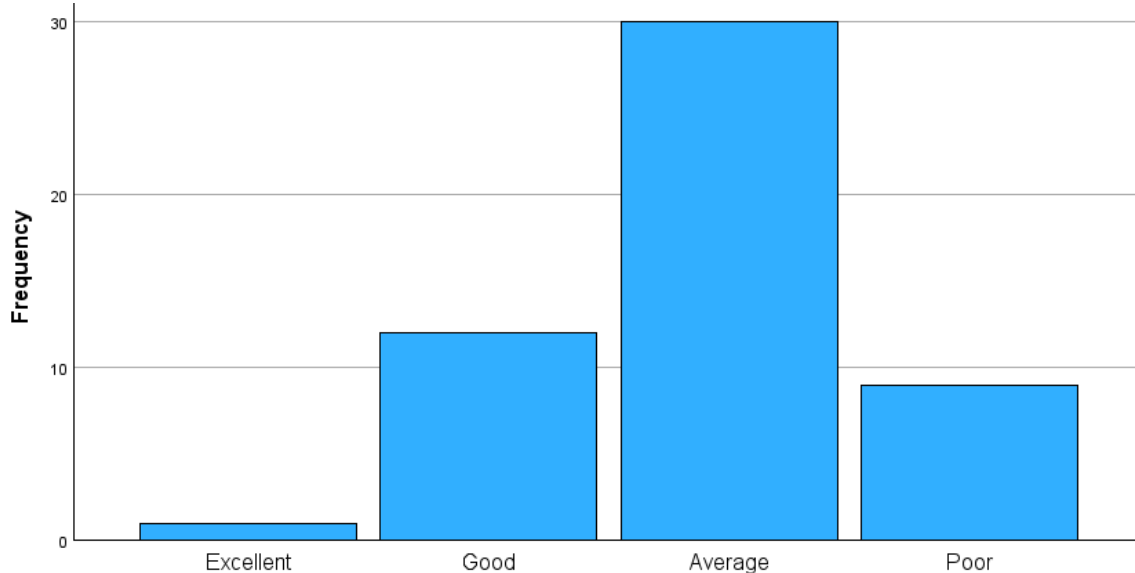
1. It is essential to acknowledge the limitations of the study, including constraints such as time, resources, and access to proprietary information. The study may not capture every aspect of the supply chain comprehensively but will strive to provide a thorough examination within the defined scope.

2. There is a possibility of response bias in surveys and interviews, where participants may provide socially desirable responses or withhold information due to perceived sensitivities or confidentiality concerns.

3. External factors such as market dynamics, regulatory changes, or unforeseen events (e.g., natural disasters, economic downturns) may influence supply chain practices and outcomes during the study period, which are beyond the researcher's control.

IV. DATA ANALYSIS AND INTERPRETATION PERCENTAGE ANALYSIS

the overall experience of being an agent for aavin milk union					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Excellent	1	1.9	1.9	1.9
	Good	12	23.1	23.1	25.0
	Average	30	57.7	57.7	82.7
	Poor	9	17.3	17.3	100.0
	Total	52	100.0	100.0	



INTERPRETATION

The data suggests that the overall experience of being an aavin milk agent is somewhat mixed. While a quarter of the agents (25.0%) rated it as good and a small proportion (1.9%) rated it as excellent, a significant portion (57.7%) found it to be average. This indicates room for improvement in agent satisfaction. Nearly one-fifth (17.3%) of the agents even rated the experience as poor.



CORRELATION

Descriptive statistics			
	Mean	Std. Deviation	N
How satisfied are you with the support and assistance provided by aavin milk union to agents like yourself	3.3269	.96449	52
What can aavin milk union do to better support its agents in distributing milk products	2.5769	.66704	52

Correlations			
		How satisfied are you with the support and assistance provided by aavin milk union to agents like yourself	What can aavin milk union do to better support its agents in distributing milk products
How satisfied are you with the support and assistance provided by aavin milk union to agents like yourself	Pearson correlation	1	.280*
	Sig. (2-tailed)		.044
	N	52	52
What can aavin milk union do to better support its agents in distributing milk products	Pearson correlation	.280*	1
	Sig. (2-tailed)	.044	
	N	52	52

*. Correlation is significant at the 0.05 level (2-tailed).

INTERPRETATION

The data reveals a statistically significant correlation (0.280*) between agent satisfaction with Aavin’s support and their suggestions for improvement. Agents who are less satisfied with Aavin’s current support are more likely to have suggestions for improvement. There’s a weak positive relationship.

REGRESSION

Variables entered/removed			
Model	Variables entered	Variables removed	Method
1	No of years as aavin agent, occupation of the agent, education level of the agent ^b		Enter
A. Dependent variable: average milk sales in a month			
B. All requested variables entered.			

Model summary				
Model	R	R square	Adjusted r square	Std. Error of the estimate
1	.522 ^a	.273	.227	.78363
A. Predictors: (constant), no of years as aavin agent, occupation of the agent, education level of the agent				



Anova ^a						
Model		Sum of squares	Df	Mean square	F	Sig.
1	Regression	11.044	3	3.681	5.995	.001 ^b
	Residual	29.476	48	.614		
	Total	40.519	51			
A. Dependent variable: average milk sales in a month						
B. Predictors: (constant), no of years as aavin agent, occupation of the agent, education level of the agent						

Coefficients						
Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. Error	Beta		
1	(constant)	.440	.493		.893	.376
	Occupation of the agent	.019	.190	.013	.102	.919
	Education level of the agent	.190	.093	.266	2.047	.046
	No of years as aavin agent	.299	.073	.533	4.109	<.001
A. Dependent variable: average milk sales in a month						

INTERPRETATION

The model suggests that experience as an aavin agent is the strongest factor associated with higher average monthly milk sales. Agents with longer tenures likely have established customer bases and distribution networks, leading to greater sales volume. Education level has a secondary positive influence, but the effect is weaker. The model doesn't find a significant impact of the type of agent occupation (petty shop, retail outlet, door-to-door delivery) on sales volume.

V.FINDINGS, SUGGESTION AND CONCLUSION

FINDINGS

- The majority of agents (82.7%) expressed a need for real-time product tracking technology.
- Majority of the 38.5 agents are in the age group above 60
- Majority of the 63.5 agents are in the retail outlet business
- The majority (61.5%) have completed secondary school education (sslc or +2)
- Over a third (32.7%) have been agents for more than 10 years, indicating a core group with extensive experience within the aavin network

SUGGESTIONS

- Introduce a comprehensive sales tracking using Management Information System to monitor unit sales and identify high-performing agents and areas needing improvement.
- Implement a sales promotional activities for the agents would help the union to motivate the Agents to purchase more.
- Incorporating an Application would require specialised training sessions for the agents to educate them about how to

use the applications and things that they can do on the application

- Develop a user-friendly mobile application for agents to raise queries, make payments for the Intents as they face issues during the weekends and government holidays, and place orders, enhancing efficiency and convenience.
- Utilize the app as a communication platform to reduce wait times for agents at the union and allow them to focus on their work.

CONCLUSION

Too much interference of the management making it difficult to business Tubs are not clean and has very sharp edges Improving communication, offering training, and implementing a dedicated sales support team could address this. Leakage and product damage are significant concerns for agents, impacting their profits. Upgrading packaging and implementing real-time tracking technology could be solutions. Despite challenges, most agents find Aavin's milk distribution timings convenient and believe in the product quality. There is a strong foundation to build on. Experienced agents and those with higher



education levels tend to sell more milk. Aavin may benefit from programs that support agent development. The main issue in the union is not the quality of product or the distribution system, it is the management blunders which creates hate among the agents, voices of the agents are always scrutinized by the management. A specified application for the implication of traceability of transactions and bookkeeping of the ledger accounts so that they could able to reduce end minute chaos and in the application it is advisable to add real time tracking and refund system as well as a communication forum could able to increase the trust among the agents and made them fell respected, could increase the operations of the union.

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