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INFLUENCE OF VEHICLE MATRIX ON FMCG RETAILERS' BUYING INTENTION

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ABSTRACTS

In FMCG sector, the bit plan is the main strategy to cater in the field. The salesperson as a order taker and order giver, touches at least 50 to 60 bits in a route daily basis. The orders from the retailers are to be delivered as soon as possible in a quick and economical manner. For that, the vehicle matrix is used to cater the products to the bits. In this research, the objective is to study the influence of the vehicle matrix on FMCG retailers' buying behavior. Samples are collected from 120 retailers, and the responses are tested through the statistical method by using the regression method in SPSS statistic 20. It is found that there is a negative and negligible influence of vehicle matrix on the retailers' buying behavior. The causes are found in the factor analysis. In future, AI/ML will solve the low determinant factors that influence buying behavior.

Keywords: Bit plan, Vehicle Matrix, AI/ML, Retailer, Buying Intention, FMCG

1. Introduction

A salesperson has to cover a particular route on a day-to-day basis. For example, on Monday, the sales personnel has to cover an area, named B. He has to cover 40 kilometers from the headquarter A to the destination B and contact at least 60 FMCG retail outlets in that day, starting from the outskirts to the station area. The frequency of visits to that place may be monthly, twice or three times as per the plan. The beat plan is based on the number of counters available in that route and the expected order from those bits. The frequency of visits depends on the output from the bits of that route. The sales team confirms the order from the bits and given to the wholesalers and dealers. Now the responsibility arises to make quick delivery of the products for placement of the products in the retail counters.

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The products are to be placed through the channels of distribution through a viable logistic system. The whole quantity is to be retailed according to the order confirmed from the salespersons, aligned with different routes and bits. The volume of the order for a particular route ensures the type of vehicle required for distribution of goods in a particular route. The number of bits and distance of the route and, the volume of the order along with the expected collection are the factors that influence the selection of the vehicle, whether, it is a bi-cycle, motor cycle, tempo, van and truck. The catering of the volume of the products through a selected vehicle for the quick placement of goods and services is known as the vehicle matrix.

A retailer has a very good personal connection with his customers. He always provides good services, quality products, and other different facilities for retention of his customers. He never wants that his customer would return back without getting the products and services what he is needed. Retailer's personal behavior, reputation and his social connection influence the local people to come to his doorstep. He studies people's intention to buy the product as per the consumers' desire to purchase the product. The retailers' intention to purchase a particular brand depends on the product or services offered by the competitors, consumers' need, and product value and excellent offer. In the case of FMCG product, the retailer always keeps the products that are demanded by the customer, and advertisements of them are rolling out in different media channels.

Aljohani, K. (2023) has identified that the advanced technology has reduced the travel distance by 16%, which caused a reduction in the distribution costs by 14% in the supply chain of bakery products. It results for a decreasing estimated food waste by 22%. He found the result without committed storage services, but has implemented a direct distribution system from the bakery to customers. In case of luxury products, an indirect distribution system is essential and preferable because, the cost benefit is much higher, which is not possible in fast-moving consumer goods (FMCG) sector (Berndt, R., Fantapié Altobelli, C., & Sander, M., 2023).

Forti, A. W., Ramos, C. C., & Muniz Jr, J. (2023) present the plan structure lattice (DSM) and the measured capability arrangement (MFD), to the products with a huge number normally tracked down in the car business. To approve this cycle, the creators and a cross-useful group chipped away at the modularization interaction of an air back suspension framework for weighty vehicles with 44 parts. The DSM technique is a cross-useful group that picked seven last reasonable modules that considers ring parts mounting in the mechanical production system and the store network of parts as well. This technology may be used in the vehicle matrix for distributing FMCG products in a large quantity in a long distance route.

Gardas, R., & Narwane, S. (2024) have identified and examined the critical factors for adopting machine learning technologies in manufacturing and supply chains. In the beginning, the 13 critical factors are identified. The Decision-Making Trial and Evaluation Laboratory (DEMATEL)

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methodology are used to analyze their cause–effect relationship. Then after, machine learning (ML) is used to bring the qualitative decision making in the logistics management for the purpose of cause-effect decisions making.

Gimeno-Arias, F., & Santos-Jaén, J. M. (2023) have identifies the dark market inside the inventory and distribution channels in the FMCG sector. The collaboration of authentic distributors, wholesalers and retailers relationship is disturbed. The technology enabled technique is used to eliminate the dark market from the channels of distribution.

Guru, S., Verma, S., Baheti, P., & Dagar, V. (2023) have suggested the use of conveyance channels rather than the technical distribution platform in the case of Nigeria for the purpose of building the association among the labor and product. The truly association is maintained by the physical touch in building acquaintances between manufacturers, distributors, wholesalers and retailers. The deep reason behind it is to avail the products quickly for the quick buyer merchandise in FCMG sector.

Kusuma, A. R., Syarief, R., Ekananta, A., & Sukmawati, A. (2023) have shown the issues relating to the Indonesian FMCG sectors. The internal issues and conflicts of hierarchical executives and external issues of buyers, rivalry and competition are well studied to accomplish a smooth flow of work by using a regulated computerized support system. This support system enables the internal hierarchal conflict resolution and change in marketing environment.

Sharma, A. and Sagar, M. (2023) has identified salespeople's challenges while selling newly launched products in the FMCG sector. TISM and MICMAC models are used for identifying the sales challenges faced by the salespersons while selling a new product. The models are also used for making the new product innovation, product differentiation, customer acquisition and market penetration. A numerical model is used by Talay, M. B., Pauwels, K., & Seggie, S. H. (2023) identify such issues from the Turkey's wholesalers of FMCG sector.

Abdallah, K. S., & El-Beheiry, M. M. (2022) had denoted the Vendor Managed Inventory (VMI) policy, which is used in FMCG sector in order to optimize the transportation and inventory cost. The demand and supply of the products are analyzed through this model. The shipping charges, trucking charges and stores charges are accumulated to determine the overheads to the cost of the products as per the distance travel and condition of the modes of transport. The distribution network is designed by using AI/ML for handling such factors.

Lysa, S., Galkin, A., & Yemchenko, I. (2022) have studied the consumer demand and supply before approach to the logistics of FMCG products. The supply chain of such sector is availed by using consumer oriented demand driven supply chain

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system. The logistic system is technologically enabled to make over the supply by studying the logistic system and consumption system.

Biswas, S., Bandyopadhyay, G., & Mukhopadhyaya, J. N. (2022) have done a comparative analysis of the dividend pay capabilities (DPC) of FMCG and Consumer Durables (CD) sectors listed in BSE, India during the period FY 2013-14 to FY 2019-20. The top 25 companies from FMCG group and top 5 firms from the CD sector are selected on the basis of average market capitalization. The factors which are considered for analyzing the sector are such as ownership, size, profitability, growth, liquidity and risk. They have used a new integrated Logarithmic Percentage Change-driven Objective Weighting (LOPCOW) and Evaluation based on Distance from Average Solutions (EDAS) framework for the further analysis. The result shows that companies do not show consistent performance over the years. FMCG organizations show comparatively better capabilities that CD firms vis-à-vis dividend payment. It states that there is a challenge in the path of the growth of FMCG and FMCD sector. The supply chain flexibility will avoid the hindrances of the growth and boost the sales of the sectors. The technology adoption will make it possible, Singh, R. K., & Acharya, P. (2014).

According to Das, G. (2014), the stimulus which influence the retailers' buying intention includes (1) individual's intention to buy the product, (2) as per the consumers' desire to purchase the product, (3) intention to purchase a particular brand, (4) product or services offered by the competitors, (5) consumers' need, and (6) product value and excellent offer.

1.1 Beat Plan

Generally, a bit plan is a selection of number of stores in a route and the volume of expected business from those stores. In daily basis, a plan is predetermined and patch list is prepared in day basis starting from Monday to Saturday. Every day, particulate route is fixed and number of bits or retail counter are fixed. In this manner, beat plan states that whom to visit, when to visit, how much collected to collect and how much order to be taken from the bits. The concept is especially fit to the FMCG sector. The bit plan is predetermined for the optimization of the sales and receivables and placement of the products in the retail counters. The frequency of the visit may be daily, weekly, monthly and yearly, which depends on the business performance. The beat plan includes territory planning, visit plan, product placement plan, collection plan, order taking and order giving to the potential bits. It avoids wastage of time, product and money of both company and channels in distribution responsibility. Beat is an assortment of outlets; a salesman covers in a particular day. It is a day level route plan made for field sales representatives to make visits to a certain number of stores at a predefined frequency. It defines whom to visit, when to visit based on the company's priorities on stores category. The daily Beat plan is a schedule of outlets that are fixed to

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be covered on a single day in a route and generate business, which is the ultimate objective of the organization.

1.2 Vehicle Matrix

Vehicle Matrix is a systematic analysis of delivery system of goods. The dispatch of goods from stock point to the bits of a route is calculated. The number of orders, volume of orders and types of products, size of the products and quality of the product influence the design of the vehicle matrix. Whether the route demands for truck load, tempo load, mini truck load, auto load, motor cycle load or by-cycle load? Accordingly, the types of transportation are decided in the field. The economic factor, volume factor and the cost of delivery, transmission type, air conditioning, fuel type, and door count are the influential factors to determine the vehicle matrix.

1.3 AI/ML in Distribution

AI/ML has a great role in business prediction in any business sector. In FMCG sector, it is vital to use the technology of prefunding the business projections on a daily basis. According to the forecasting data, the bits plan and vehicle matrix are determined. A neuron logistic network is developed to analyze the retailers' buying intentions and projected business volume in a particular route and bits. Based on the data, the vehicle matrix is selected for the smooth and quick dispatch of the goods to the retail counters. In this way, the placement of goods is happened without any disruption. The system satisfies the retailers, henceforth to increase the frequency of the order.

1.4. FMCG Retailers' Buying Intention

The buying intention of the retailer is influenced by the profit margin, customer demand, advertisement, sales promotion, and scheme of the product. The companies' whole target achievement depends on the performance of the retailers. Bits' performance and customers' consumption ultimate adhere to the achievement of corporate goals. According to Das, G. (2014), the stimulus which influence the retailers' buying intention includes (1) individual's intention to buy the product, (2) as per the consumers' desire to purchase the product, (3) intention to purchase a particular brand, (4) product or services offered by the competitors, (5) consumers' need, and (6) product value and excellent offers which are the base of FMCG sector.

2. Research Methods

The study addresses the influence of vehicle matrix on the FMCG retailers buying intention. The concept of bit plan is deeply accessed, where the AI/ML is also conceptualized. The convenience sampling is used to collect 120 samples from different FMCG retailers. From the literatures and theoretical background, the factors and actors are found. There is a positive influence of bit plan, AI/ML on consumer intention, found from the study. But the main study is directed to study the influences of Vehicle Matrix on the FMCG Retailers' buying intention. The hypothesis is developed, and 10 research questions are assumed. Data collected through a structured questionnaire and analyzed by using IBM SPSS Statistics 2.0. Correlation and

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regression analysis are used to find out the significance of the study.

Objectives

1. To study the influence of Vehicle matrix on FMCG Retailers' Buying Intention.

Hypotheses

H_1: There is a significant influence of Vehicle Matrix on FMCG Retailers' Buying Intention

H_0: There is an insignificant influence of Vehicle Matrix on FMCG Retailers' Buying Intention

Table 1 Descriptive Statistics

	Mean	Std. Deviation	N
FMCG RETAILERS' BUYING INTENTION (RI)	17.0083	3.68393	120
VEHICLE MATRIX (VM)	16.0083	3.63340	120

Table 2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.038[a]	.001	-.007	3.69679
a. Predictors: (Constant), VEHICLE MATRIX (VM)				

Table 3 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.630	1.531		11.517	.000
	VEHICLEMATRIX	-.039	.093	-.038	-.416	.678
a. Dependent Variable: FMCG RETAILERS' BUYING INTENTION (RI)						

Table 4 Factor Analysis-Communalities

	Initial	Extraction
VM QUICK DELIVERY-stock point	1.000	.824
VM QUALITY	1.000	.819
VM SAFETY	1.000	.826
VM ECONOMICAL	1.000	.816
VM DOORSTEP DELIVERY	1.000	.814

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RI QUICK PLACEMENT	1.000	.938
RI CUSTOMER SERVICE	1.000	.731
RI CUSTOMER DEMAND	1.000	.880
RI PROFIT MARGIN	1.000	.740
RI PROMPT SALES	1.000	.739
Extraction Method: Principal Component Analysis.		

3. Results and Discussion

The influence of vehicle matrix on the retailers' buying intention towards the FMCG products is examined through responses from 120 respondents (Table 1 Descriptive Statistics). Correlation between VM and RI is 0.38[a] which is negative shown in Table 2. Testing of hypotheses leads to β= -0.038, where the resulted value 0.678 is more than *P* value = 0.000, indicates insignificant in Table 3. The influence of VM on RI is purely adverse. The case of such result is found from the factor analysis given in Table 4. The positive determinant factors of vehicle matrix have a great role in influencing the FMCG retailers, coined as quick delivery from stock point (0.824), maintaining product quality (0.819), maintaining product safety (0.826), and economical delivery charges (0.816), and retail point door step delivery (0.814). But the reversal determinant factors which are coined with the retailers buying intention are such as customer service (0.731), profit margin (0.740), and prompt sales (0.739). These adverse points which are associated with correlation result (0.38[a]), and acceptance of H_0: insignificant influence of Vehicle Matrix on FMCG Retailers' Buying Intention.

Due to low profit margin, the retailers cannot do prompt sales. They cannot give discount to the consumer and does not appeal to the increase in frequency of sales. Vehicle matrix helps in the quick delivery to the retail points. Products are placed (0.938) in bits of any route easily, but customer service management is not properly followed in this process. A retailer always wants to fulfill the customer demand (0.880), but fails to provide customer service and prompt sales to the consumer due to fewer margins (0.740) in FMCG sector business.

4. Conclusion

In this research, the profit margin and the prompt sales are two major factors to be focused on to retrain. Even tough, vehicle matrix has a great influence on the retailers buying intention, an advanced technology to be introduced from the point of bit plan, vehicle matrix to the direct placement of products in the bits. AI/ML will help to cater the daily bit plan, selection of vehicles and selection of right products in right quantity. Furthermore, the adoption of electric vehicles in vehicle matrix will be the ultimate solution to balance the profit margin of retailers by reducing the transportation cost. AI/ML will determine the shortest route and prospective bits in such route, which will also reduce the cost of placement and receivables. Distribution loops and right demand forecasting will lead

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to the smooth business performance. Finally the adoption of the technology will influence the retailers' neuron to have habit of viable intention to purchase the FMCG product of any company.

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