

Internet of Things in FMCG Sector for Better Penetration in Rural India

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Abstract

Even though most consumers are unaware of it, the Internet of Things (IoT) is quietly linking more consumer goods. Consumers expect connectedness in common household goods and technology, regardless of the terminology used to describe the phenomenon such as smart fridges, smart television and gadgets that interact with each other. Since rural India is the biggest market for fast moving consumer goods (FMCG) industry, intensive penetration of the FMCG sector in rural India is beneficial both in demand and supply side of the market. The purpose of this paper is to highlight how IoT can be the facilitator for FMCG industry to penetrate better in the rural India and expand its market base. With the help of a mixed method research, it is inferred that effective expansion in FMCG sector is possible only through exploring rural market with the help of IoT.

Keywords: IoT, FMCG Sector, Rural Market, Penetration, Rural Consumers

INTRODUCTION

More than sixty percent of Indian population lives in villages. These villages may have only few to few hundreds of households. Depending upon the size of the village, we might find few shops, a small post office, panchayat (village council) office, and a school. Weddings, local fairs, religious celebrations add thrill to rural life. The basic needs of the rural people are food, clothing and shelter. With the cross flow of people from rural to urban or semi urban, the necessities have increased over the time. This cross flow of information has made the rural to purchase supplementary products and services in addition to increased demand for basic needs. Increased literacy rate has also acted as a catalyst for demanding more goods and services. Lot of discussions are happening in India regarding whether rural India is developed in terms of income, infrastructure and mind set of rural consumers [1]. The reality of rural India is little different than what we hear. There are many villages without basic amenities. Because of the seasonal nature of income, buying durables goods is a dream for many rural consumers. Even today there are rural families earning income less than Rs.3000 per month. The rural market has gained importance in recent years and has caught the attention of marketers due to the fact that 68.84% of India's population lives in 6, 38,000 villages and that the country's overall economic growth has significantly increased the purchasing power of rural populations. The green revolution has increased the amount of manufactured and industrial goods consumed in rural areas. This study is a step forward in exploring scope of in the rural market along with the current scenario for FMCG sector [2].

Rural marketing has become a key trend in Indian marketing during the past few years. The main goals of this article are to appreciate market segmentation and growing rural markets in India. The movement of goods from urban to rural areas is the foundation of rural marketing. The tangible distinction and interrelation between the urban and rural societies in India, and their economic and sociological dimensions make the understanding of rural markets exceedingly complex [3]. The variances in consumer likes and preferences as well as the growth in their purchasing power are leading to an increase in competition and customer bargaining power. The marketer must first comprehend the needs of rural consumers in order to meet them. It is the responsibility of the marketer to divide the entire heterogeneous market into some homogeneous segments for better customer service. This inevitably leads to customer satisfaction and loyalty. This article explores the various kinds of market segments in rural India in order to deliver the expected value in rural India, so as to have a competitive advantage.

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Significant changes have been observed in the purchasing and consumption habits of rural consumers as a result of the extensive changes in rural India brought about by the agricultural revolution, the expansion of education, improved infrastructure, better banking facilities, etc. [4]. These variables combined to encourage consumption among the rural people. Rural marketing has thus become a key issue in Indian marketing over the past few years. This has also been made easier by the expanding use of electronic media and advertising in rural areas. Additionally, the rural population is striving for better lives, especially in light of the rising disposable incomes that are becoming available to a sizeable portion of them. The Indian and international FMCG and consumer durables corporations recognized the enormous potential of the rural markets and made an effort to reach these areas. Some businesses did enter the rural market, despite the practical limitations caused by the absence of transportation and communication infrastructure and the lack of a comprehensive grasp of rural life.

For the last 20 years, people have been discussing a lot about the rural market, and articles have been published, although mostly in the corporate magazines. Except a very few companies, none ventured into the rural areas. One reason might be the advantage of the license raj with very little competition and the second reason cited is the poor transportation and infrastructure facilities in the villages. As the doors to the rural markets remained closed at the primary level itself, the question of strategies and understanding of the buyers in the rural areas was never thought of. Today, although the infrastructure and transportation facilities have not improved, as was expected, the competition and the need for expansion henceforth have brought in the rural market into focus.

FMCG IN INDIA

Over three million people are employed in downstream activities by the Fast Moving Consumer Goods (FMCG) business in India, which is ranked fourth in terms of the country's economy. Personal Care, Food & Beverages, and Household Care are some of its auxiliary components. Over Rs. 96,000 Crores is spent on the FMCG industry as a whole. Its growth rate is currently in the double digits, and it is anticipated to expand much faster. Consumer packaged goods (CPG), also known as fast-moving consumer goods (FMCG), are items that are frequently used and sold quickly as opposed to perishable goods like kitchen appliances that are replaced over time. The manufacturing, marketing, and distribution of CPG are first handled by the FMCG industry. Food and dairy goods, pharmaceuticals, consumer electronics, packaged food items, household products, and beverages are just a few of the categories that FMCG products fall under. Coffee, tea, detergents, tobacco and cigarettes, soaps, and other goods are a few general FMCG products. Sara Lee, Nestle, Reckitt Benckiser, Unilever, Procter & Gamble, Coca-Cola, Carlsberg, Kleenex, General Mills, Pepsi, Mars, and other well-known brands are among those in this sector.

“FMCG commodities are those goods with an average lifespan of one year. Examples of FMCG products typically include a wide variety of frequently purchased consumer goods, such as toiletries, soap, cosmetics, tooth-cleaning supplies, shaving aids and detergents, as well as other non-perishable things including glassware, bulbs, batteries, paper products, and plastic items. Pharmaceuticals, consumer electronics, packaged foods, soft drinks, tissue paper, and chocolate bars have all been a part of FMCG. The FMCG sector makes a considerable contribution to India's GDP. It ranks as the fourth-largest sector of the Indian economy.”

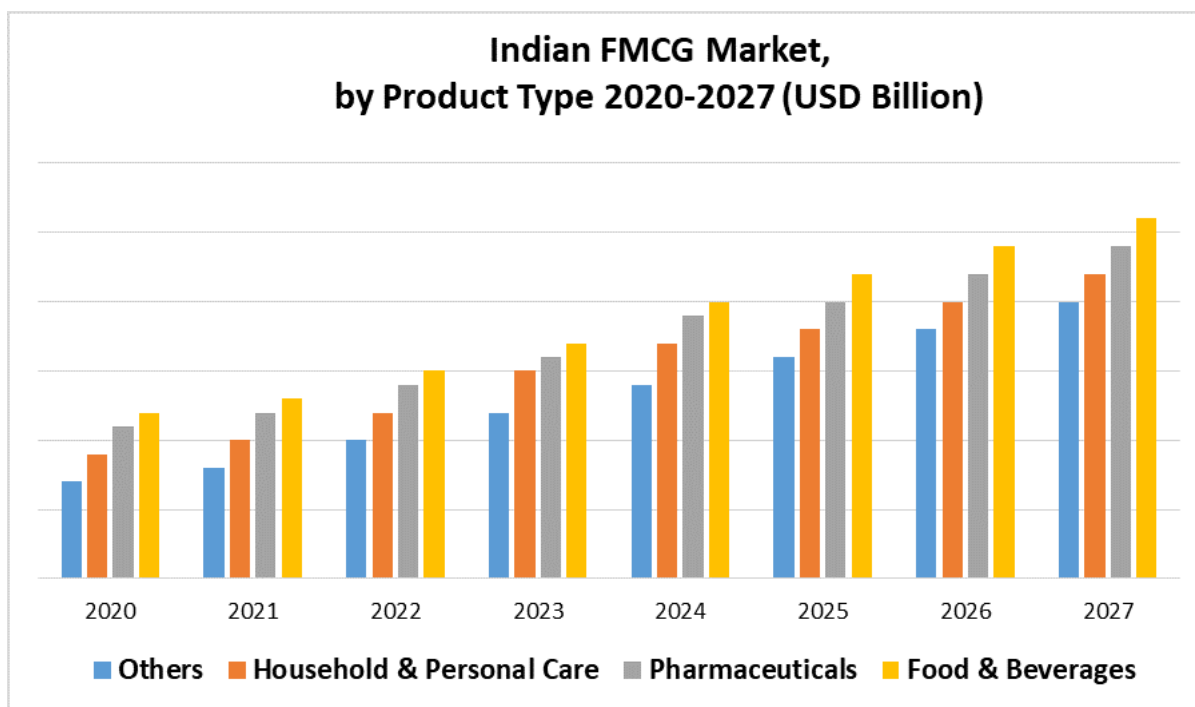


Figure 1: Growth of FMCG market in India

Source: <https://www.ibef.org/industry/fmcg> [5]

RESEARCH METHODOLOGY

Sources of data: Both primary and secondary data are used as the foundation for the investigation. By distributing a well-structured questionnaire with a 5-point scale, primary data is gathered. The questionnaire is translated into local languages for the respondents' comfort. The questionnaire contained questions on demography (gender, age group, income level & education level) and questions on influencing variables. Secondary data was collected from various sources such as newspapers, magazines, journals, company brochures, Internet and Government reports.

Sample design: Sample size comprised of 250 rural consumers. The respondents were selected using convenience sampling technique. The sample unit was made up of rural villagers who buy and consumed FMCG products.

Data analysis tools & techniques: The data was analysed in percentages through tables, graphs and figures. To understand the association between the rural demography and influencing variables, Chi-square tests were conducted and to understand the relationship between the influencing variables, Correlation analyses were conducted.

DISCUSSION OF THE RESULTS

Sample Characteristics

Table 1 presents gender proportion in the data. Out of 250 respondents, 135 were males (54%) and the 115 were females (46%). The Next important demographic information of the respondents is their age group. Table 2 presents the distribution of age group among the respondents. More than 70% of the respondents are below 35 years age.

Table 1: Gender composition

Gender	No.	%
Male	135	54%
Female	115	46%
Total	250	100%

Source: Primary Data

Table 2: Age groups of the respondents

Age group	No.	%
20-25	80	32%
26-30	75	30%
31-35	25	10%
36-40	40	16%
41 & above	30	12%
Total	250	100%

Source: Primary Data

Table 3: Income levels of the respondents

Income level	No	%
500-1000	35	14%
1001-1500	95	38%
1501-2000	75	30%
2001-2500	30	12%
2501 & above	15	6%
Total	250	100%

Source: Primary Data

Table 4: Education levels of respondents

Education	No.	%
Uneducated	35	14%
Schooling	135	54%
College	60	24%
University	20	8%
Total	250	100%

Source: Primary Data

Table 5: Marital status of the respondents

Marital status	No.	%
Single	30	12%
Married	220	88%
Total	250	100%

Source: Primary Data

Income is one of the important demographic variables in rural areas as the Income levels in rural areas are relatively lower. Most of the respondents are in the income group of Rs.1,001 to Rs.1,500 (38%) per month (Table 3). Table 4 presents the education levels among the respondents with illiteracy levels still appearing to

be significant with 14% while majority of the respondents are only with school level educational qualifications. 88% of the respondents are married (Table 5).

Key Individual Variables that Influence Rural Purchase of FMCG

Understanding different variables that influence the rural purchase of FMCG is crucial as this understanding can help managers in devising fruitful strategies. Current study enabled us to understand and further analyse key influencing variables. The questionnaire comprised of 24 variables which were presented on a 5-point Likert's scale. The respondents expressed their level of agreement with each of the statements on the questionnaire as Never, Rarely, Sometimes, Mostly or Always. Table 6 presents findings from the current study, details of some of the important individual variables that influence the rural purchase of FMCG. Never and Rarely are presented as having less influence, Sometimes as having moderate influence and Mostly and Always as having high influence in rural purchase of FMCG.

Table 6: Important variables that influence the rural purchase of FMCG

Variable	Description	Degree (%) of influence			Total
		Less	Moderate	High	
Shopkeeper recommendation	I buy FMCG suggested by shopkeeper	9%	17%	74%	100%
Low price	I buy FMCG that are priced low	1%	32%	67%	100%
Need based purchases	I buy FMCG only when needed	4%	7%	89%	100%
Awareness	I buy FMCG that I am aware of	1%	7%	92%	100%
Product promotions	I buy FMCG that are advertised/ promoted	2%	11%	87%	100%
Availability	I buy FMCG that are conveniently available	1%	4%	92%	100%
Quality	I buy FMCG that is of good quality	17%	28%	55%	100%
Packaging	I buy FMCG wrapped in attractive packaging	21%	18%	61%	100%

Source: Primary Data

Commitment (of shopkeepers) and trust (in shopkeepers) can be the foundation for building long lasting relationships in the markets. In the current research, 1368 (74%) of the respondents mentioned that they would follow the recommendation of shopkeepers. Thus it can be interpreted that as middlemen play crucial role in effective supply chain the 'Trust factor' that prevails in rural market can help managers in performing effective rural marketing. According to Prahalad, C.K. (2005) one cannot conclude that rural consumers buy only low priced and low quality goods as they started seeking good quality products and prepared to spend more. In the current research, quality emerged as one of the influencing variables with 55% of the respondents seeking good quality FMCG.

Interesting finding is that only 67% of the respondents preferred low priced FMCG. Thus from the above two findings it can be interpreted that the rural markets in South Asia are emerging as attractive markets beyond traditional view points of 'low quality for low price'. It was also found that rural consumers do not stock goods and instead purchase goods only when needed (89% of the respondents). Awareness is key to success. 1701 out of 1849 (92%) of the respondents mentioned that they would buy those FMCG products and brands that they are aware of. Advertisement sells even in rural areas and in the current research it was found that 87% of the respondents' purchases are influenced highly by product promotions and advertisements. It was also found that 92% and 61% of the respondents' purchases are highly influenced by availability and attractive packaging respectively. Other variables that were found to be influencing the rural purchase of FMCG include, shelf display, brand visibility, friends or family member's recommendation, celebrity endorsement (having moderate influence), product education and size of FMCG (having low influence).

SCOPE OF FMCG IN RURAL MARKET

Lot of discussions are happening in India regarding whether rural India is developed in terms of income, infrastructure and mind set of rural consumers. Many times we hear about prosperity of rural people. The decision regarding whether development has happened cannot be based only on the rural areas close to city

canters. The reality of rural India is little different than what we hear. There are many villages without basic amenities. Because of the seasonal nature of income, buying durables goods is a dream for many rural consumers. Even today there are rural families earning income less than Rs.3000 per month. Based on the observation made during the study and analysis, the following suggestions are given:

Fast Moving Consumer Goods have already entered rural markets already. Consumer durable goods art to find market place in rural areas. Proper understanding of rural market potential, challenges and characteristic features of rural markets will go a long way in increasing market share for business houses.

There are many households in rural areas without basic products. They feel that they cannot afford to buy durable goods as the price of these goods is considerable high. These potential consumers have adjusted to the realities of the life and living self-contentment life. There it is desirable to design goods that can match rural requirements.

Products with luxury features would not fetch good markets for durable goods. It is a real challenge before the marketer to design and develop products that can use simple technology but still capable of holding functionality in it.

Affordability is a general mantra of rural consumers. They would not spend money unnecessarily on the products that will not provide continuous benefit to them. They would not buy products to use occasionally. Always rural consumers would like to derive more benefit for their money and time. Due to this reason, producing products to meet rural market requirements need to use alternative resources and source of energy to drive them.

Many rural consumers do not have high expectations about life. Conservative mindset drives their decision making process. Therefore, it is hard to push products in these markets. Though the purchasing power of at least some of the rural families has gone up, reserved mind set still prevails in these markets. Marketers should create awareness about the product availability and benefits not just features.

Lack of ambitiousness and limited income are the two major reasons for very slow market growth for consumer durable goods in rural areas. Though the government has taken steps to create opportunities to increase income in rural areas, the benefit has not reached as expected. Therefore, designers should always keep these factors in mind before producing the product. One fit for all strategy can never succeed in these markets.

Rural people prefer to buy durable goods that are repairable, reusable and can be used for multiple purposes. This expectation offers a real challenge for manufactures. Maruti Omni vehicle is one such product that is popular in rural areas, as it can be used for multiple purposes.

Scattered population, diverse income and cultural background make it even difficult for the marketer to target rural markets. Nature of rural villages should be properly studied for right segmentation and clustering of markets.

Only direct interactions with rural consumers can alter their mindset. Advertising might not be as helpful as it could be.

Many a time product would not reach market place due to lack of awareness about the product availability, and benefit offered by them. It is, therefore, necessary to design appropriate communication engine to bring necessary information to these market places.

Provision of required infrastructure and information is essential for the success of products in rural markets. In the absence of basic amenities like quality power creates additional problems to marketers. Keeping such aspects in mind, the manufacturers should design products that use unconventional resources to suit rural markets.

Building strong supply chain networks that can deeply penetrate into rural markets is absolutely required. Quality of product cannot win the market when they cannot enter rural markets.

IoT in FMCG Sector

The global market for fast-moving consumer goods (FMCG), according to Research and Markets, is projected to grow to \$622.5 billion by 2027. IoT networks and devices have long been used as a platform by savvy FMCG companies to increase sales of everyday household goods. Costs associated with IoT hardware and services are expected to decline over the next few years, with the exception of price increases brought on by the global electronic component supply chain problem triggered by the pandemic. FMCG firms will have a strong incentive to invest in IoT solutions as more competitors adopt connected consumer goods.

IoT adoption for consumer goods has been driven by working from home and other trends that were initiated during the COVID-19 pandemic. New potential to increase sales will be enabled by the initial 5G IoT consumer gadgets. As 5G coverage reaches a critical mass, this quick, adaptable cellular technology will widen the markets that are adopting IoT. Major usage of IoT in FMCGs are for packaging, payment system, and connected wearables.

Internet of Packaging

Autonomous delivery vehicles and smart packaging will work together to give customers more convenience at a reduced price. A QR code that can be read by a smartphone or gadget given by the store can be used as interactive packaging. The code starts a process that could provide information or make it easier to pay for things without going to the register. Through their packaging, digital printing, RFID tags, and NFC protocols increase product communicability. This communication opens the door for the integration of augmented reality (AR) or artificial intelligence (AI). The rising usage of sensors and app integration paves the way for more complex smart packaging applications. Among the innovators in this field are smart bottle tops that track the vitamins you've taken or buzz to remind you to drink water.

In-Vehicle Payment Systems Are En Route

Consumer-connected cars have a wide range of possible applications. Making in-car payments a reality is the first step in getting to the money. Offering the simplicity of immediate, touch-free payment will be advantageous for locations like gas stations and drive-throughs. These companies will gain from being voice-search friendly and visible in online or proprietary pricing comparison services, along with repairs and rentals. By providing smart after-sales services and utilising applications to facilitate ongoing communication, dealerships may employ vehicle connection to increase client retention. It is a fact that 95 percent of the consumers arrive at the showroom well-informed. Maintaining vehicle connectivity is a terrific way to stay on the cutting edge of consumer research.

Connected Wearables

IoT-enabled wearables are a market category made up of verticals connected to every aspect of a wearer's life, employment, and physical activity (e.g., vital signs and geolocation). From 325 million delivered connected wearables in 2016 to an expected 1 billion by 2022. The wearables industry will grow through technological advancements such as sensor nanotechnology, ultra-low power or biopower harvesting, and cybersecurity hardening in the upcoming years. Wearables must continue to advance on low-power LTE technologies like LTE-M and NB-IoT as 5G rollouts concentrate on high speed. With the introduction of native 5G standards, these are expected to remain robust at least until 2024.

IoT-based Supply Chain

IoT-based supply chain as presented in figure-2 can make the consumer goods available to the rural consumers conveniently and inexpensively.

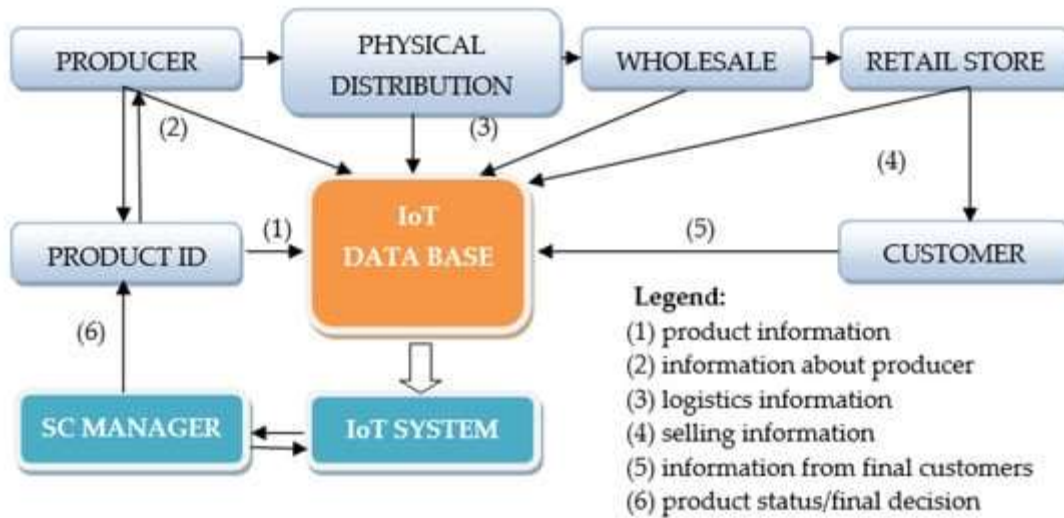


Figure 2. Internet of Things (IoT) based supply chain, Source: Koncal et al. 2020 [6]

The six stages of product monitoring along the entire supply chain are systematised in Figure-2 using IoT technology. Phase I: Using RFID tags, sensors, or bar codes and a reader, data from each product (such as its composition, shelf life, warranty period, etc.) is entered into a centralised database. Phase II: Manufacturers will submit all relevant data regarding raw materials, production processes, timing and locations, etc. Phase III: Distributors offer details on the circumstances surrounding the product's storage, supply schedule, and storage requirements. Phase IV: Distributors and retailers post data on sales volume, quantities on hand, assortment, demand volume, and return percentage. Phase V: The IoT database also saves data from the actual customers, which identifies the product's quality, choice, complaints, and use-value. Phase VI: The IoT system analyses the data from the database and gives it to the supply chain management, which takes the final decisions on the product's status, placement strategy, removing vulnerable supply points, more effectively satisfying market and consumer needs, etc. All information is exchanged along the entire supply chain. Such a digitalized system allows accurate and prompt information sharing between upstream and downstream actors in the chain, as well as vice versa, with little involvement from the human component, making it appropriate for use during significant market fluctuations like the COVID-19 pandemic.

Thus, the firms producing FMCGs need to adapt IoT-based supply chain to exploit the Indian rural market optimally.

CONCLUSION

The FMCG sector has a long history of creating reliable development through mass brands. The future is therefore highly bright for those who can comprehend the dynamics of rural markets and take full advantage of them, specifically by taking the benefit of IoT. This is because rural markets present both problems and possibilities to marketers. To successfully influence the 230 million rural consumers dispersed over around 600,000 villages in rural India, marketers must drastically alter their attitudes regarding the thriving and expanding rural markets. There is a clear need for academics and practitioners to re-evaluate the best ways to deliver brand messages given the well-documented issues with traditional communications, such as advertising and direct marketing. The importance of experience in brand performance and how interaction between internal and external brand representatives may support consumer brand relationships as they co-create added value have recently received more attention. Thus, IoT can be the game changer for the FMCG industry in tapping the rural market efficiently.

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