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Impact of AI on the FMCG Sector and Consumer Behaviour in India

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Executive Summary

I*ndia's Fast-Moving Consumer Goods (FMCG) sector, a cornerstone of its economy, is undergoing a paradigm shift through the adoption of Artificial Intelligence (AI). The industry, valued at $121.8 billion in 2023 and catering to over 300 million households, is pivotal in driving economic growth, employment, and consumer well-being (IBEF, 2024). Its heterogeneity, spanning urban and rural markets, reflects the country's socio-economic diversity. AI solutions are being deployed for solving traditional issues including supply chain, demand planning, and consumer interactions. Technologies that include predictive analytics, logistics automation, and personalized marketing are enhancing operational effectiveness and enhancing customer experience (Mukhopadhyay et al., 2024). However, the integration of AI generates a new system with higher complexity and tighter coupling, thus it increases the probability of a Normal Accident as defined by Charles Perrow (1999). This paper focuses on the ways in which AI is used within the sectors, the role it plays on a larger scale, the effects on the stakeholders, and the importance of addressing sustainability and the possible negative consequences of AI.*

Introduction

"The Fast-moving consumer goods (FMCG) sector is the 4th largest sector in the Indian economy with Household and Personal Care accounting for 50 per cent of FMCG sales in India" and growing awareness, easier access, and changing lifestyles have been the key growth drivers

for the sector as per FICCI (2016). The FMCG products in India include a large number of day-to-day requirements of the consumers such as food products, beverages, personal care products, and others. It is also among the most rapidly developing industries in the world, also providing a massive boost to GDP and jobs (imarc, 2024). This sector's coverage is applicable to the urban and rural markets, although the rural market contributes to 35% of the overall FMCG sales by 2024 (IBEF). The majority of the rural markets are the primary market for product categories such as packaged foods and health supplements with companies like Dabur and ITC for instance deriving a good chunk of their revenues from the rural markets (ET Bureau, 2025).

Of the sectors, this sector looks quite diverse, as is evident in the disparity in consumption by urban and rural households (MoSPI, 2023). In the urban markets, young people and other consumers with increased disposable incomes are ready to spend on luxury products due to changing lifestyle expectancy, while in the rural markets, the consumers' consumption patterns are determined by their ability to pay, the seasons of marketing of agricultural products, and traditional practices (Ghosh, 2023). These situations create specific difficulties for demand forecasting and inventory management, as well as for custom-made products, explaining why innovative solutions for supply chain management are needed to enhance consumers' satisfaction (Infosys, 2018).

Potential for AI Inclusion

AI is an influential issue in the FMCG sector because it is capable of solving problems and creating opportunities for development. Smart technologies such as artificial intelligence

allow firms to predict demand, reduce excess inventories, and synch production with customer wants (Mukhopadhyay et al., 2024). For instance, the ITC has used AI in analytics in real-time managing and controlling supply inventories and chains, cutting costs and being environmentally friendly (IBEF, 2024).

In marketing, AI enables targeting since the system is capable of analyzing consumer data to determine their tendency. With the help of AI algorithms, companies like Unilever, create appealing campaigns that are likely to reach specific groups of consumers ensuring their loyalty (Agarwal, 2018). In the same context as geofencing, Hindustan Unilever uses artificial intelligence in consumer targeting by customizing promotions to target rural consumers within their geographic proximity (Mishra, 2023).

AI also plays a crucial role in sustaining the environment in the FMCG sector. The use of predictive maintenance technologies saves time and energy on the production line, as Mondelez has proven by using AI to improve its production cycle (Mukhopadhyay et al., 2024). Moreover, logistics platforms based on AI technology reduce CO2 emissions due to optimized transportation routes, which helps companies achieve global goals for sustainable development. These applications demonstrate how AI can make the economies of the world more sustainable while growing them.

AI enables widespread and disruptive solutions in the Fast-Moving Consumer Goods (FMCG) sector to eliminate and innovate throughout operations, marketing, and sustainability.

FMCG giants around the world have already laid down best practices for the integration of AI across industries, thus making it easier for similar changes to take root in India.

Global Best Practices

Unilever and Coca-Cola are great examples of how AI can improve organizational performance and customer experience (Marr, 2023). Hyper-personalized marketing is used by Unilever, which relies on machine learning to determine the customer's preferences and display advertisements across digital platforms (Unilever, 2023). Depending on this strategy, the customer retention rates have been enhanced and the returns on investment in marketing have been maximized (Mukhopadhyay et al., 2024). In much the same way, at Coca-Cola, AI monitors quality in production, identifying faulty products on the production line and cutting down on the use of substandard materials (The Coca-Cola Company, 2024).

In logistics, Mondelez International applies AI for predictive maintenance, both to decrease equipment failure time and energy utilization (Oakenfull, 2024). Other AI-based solutions such as Locus enable efficient delivery routes that lower costs and emissions to meet sustainability targets by 2024 (IBEF). Indian companies like ITC have followed the same concept for their efficient logistics to increase their market share deep in rural areas (ITC, n.d.). These examples show how AI can disrupt FMCG in various operational aspects and how organizations can benefit from them.

Indian Context: Harnessing AI's Potential

In India, AI is a solution to the challenges arising from a fragmented supply chain, fluctuating customer needs, and restricted development (IBEF, 2024). In the case of rural and urban customers, it is possible to predict their demand, control stocks, and, therefore, minimize waste (Mishra, 2023). AI-assisted marketing and advertising can make it possible for firms to advertise specific products to consumers especially those in the rural regions where literacy in the use of the internet is increasing. Geofencing, used by Hindustan Unilever, is the prime example; it provides location-based incentives to entice consumers in rural areas (Agarwal, 2018).

Besides, sustainability solutions through AI remain a great opportunity for the Indian market. There are issues such as water supply and sanitation, the management of wastes, and others; AI can facilitate efficiency in resource use in production. Some firms such as ITC and Tata Consumer Products have already embarked on the AI for sustainability journey, which is an indication to other firms (ITC, n.d.).

Systems Perspective: Complexity and Coupling

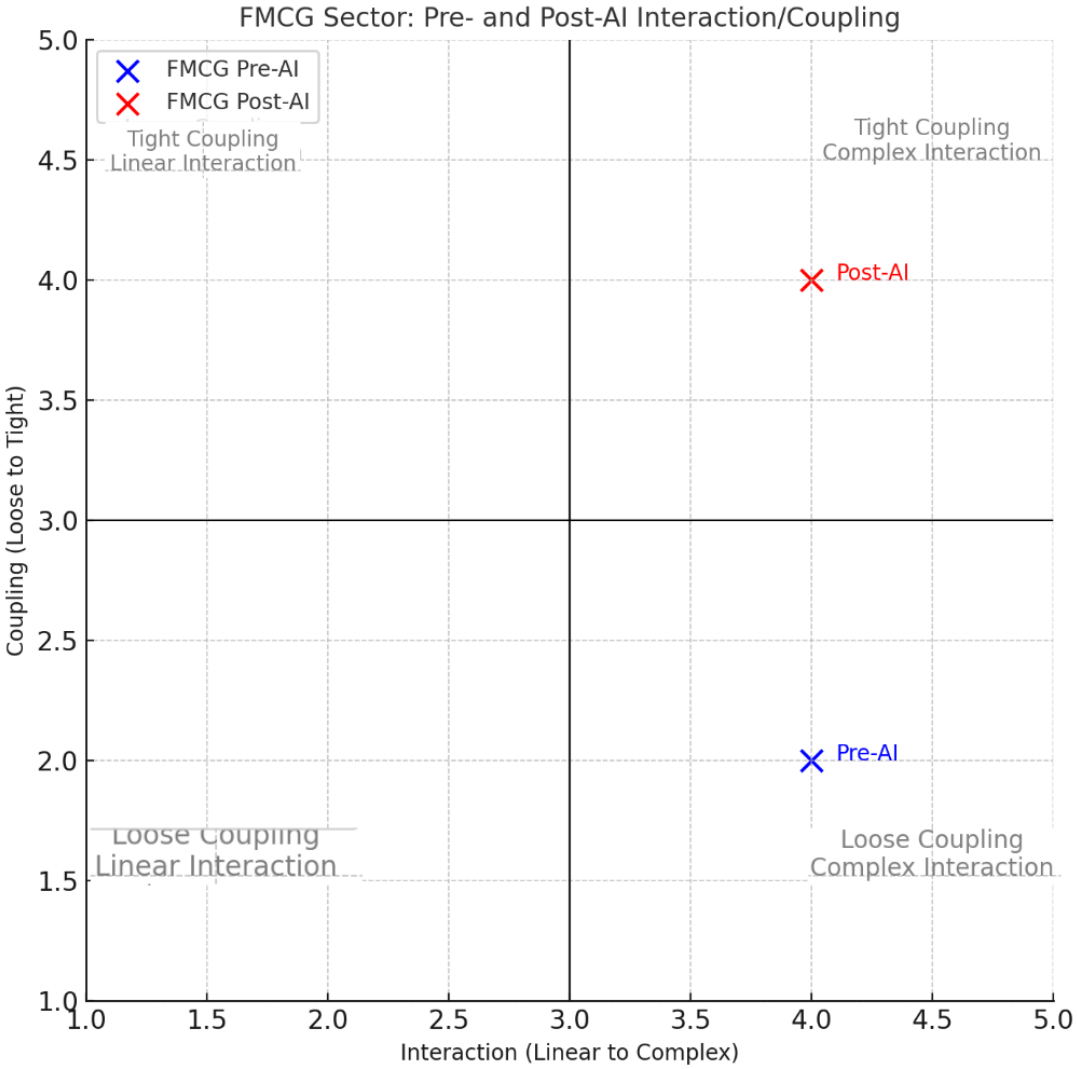
The structure of the FMCG sector in India is inherently complex because of the size, diversity, and highly fragmented supply chain that exists in the country as highlighted by FICCI

(2016). This is so due to the diversity in consumer trends, the iterative inventories, and the regulations that act as a barrier for business across the region, and above all the city and rural markets. For instance, consumers in rural markets rely on microfinance as their credit instrumentation while those in urban markets use technology apps for payments. These disparities call for additional approaches that complicate both, supply chain management and demand forecasting (Mishra, 2023).

Loosely Coupled Systems: At present, India's FMCG sector is a loosely coupled system, where its supply chain sub-components mostly work in isolation (Khan, 2024). This loose coupling creates undesirable conditions for example communication delay, stock inconsistency, and slow feedback to its changing environment. For instance, a rural distributor may take a long time to obtain information from the manufacturers regarding their inventory levels, thus resulting in either stockout or stock in excess of the demand, and thus slow sales (Khan, 2024).

Tightening Coupling: AI synchronizes the FMCG industry into a tightly coupled environment as it allows the immediate exchange of data and coordination of decision-making among supply chain nodes. For instance, AI technologies for inventory management will require schedule revisions of the production process due to the data on the sales in the rural markets received in real-time, though this will lead to more interconnected processes. According to Charles Perrow (1999), it is easier for major accidents to occur in organizations with tightly coupled systems. In an AI supply chain, a mistake in demand forecasting could make rounds in the different levels of production, distribution, and even at retail level, which could cause massive disconnection (Tripathi & Sachin, 2020).

In this case, although tighter coupling increases efficiency, it comes with the need of proper governance to prevent risk amplification. AI implementation in India's FMCG industry needs to focus on data reliability, traceability of system codes, and risk management in the event of system breakdown. Policymakers and industry stakeholders must also work together to define the appropriate use of AI and how to manage such complexity introduced by it (Revilla et al., 2023).



Source: Self-Generated

Discussion on the Potential Risks and Impact Groups

The adoption of AI in the FMCG sector affects a wide range of stakeholders, categorized into four impact groups based on Perrow's classification:

1. Group 1 (Direct Controllers of the System): This group comprises workers and executives who manage or run AI-incorporated tools. The actual process of routine tasks in manufacturing and logistics harms low-skilled workers, however, provides high-skilled job positions in managing and analyzing AI systems (Infosys, 2018). For instance, employees in the warehousing industry may find themselves replaced by robotic systems while professions like AI developers and data scientists become more relevant.

2. Group 2 (Aware but Non-Controlling Stakeholders): Consumers are within this range, they engage with AI systems even though they do not decide how these systems will be built or function. AI provides consumers with more tailored solutions, best offers, optimum prices, and convenient delivery systems. While it improves customer convenience and company effectiveness, it introduces issues such as personal data violations, unfair use of AI algorithms, and deceptive marketing (Mukhopadhyay et al., 2024). For example, through machine learning in ads, producers may target consumer weaknesses and give in to the temptation of buying something that they do not need.

3. Group 3 (Innocent Bystanders): Other stakeholders within society include small-scale suppliers and informants retailers are impacted by the Artificial Intelligence Systems (Dhadurya Naik M et al., 2023). These groups may also find it hard to integrate themselves with the technological changes in operations within the supply chain hence finding themselves locked out of the formal FMCG networks. In the same respect, informal retailers struggle with competition against AI-based e-business outlets since the latter is more efficient and customer-oriented.

4. Group 4 (Future Generations): Society is burdened with the long-term impacts of AI implementation in that more production leads to more waste and environmental pollution, which future generations have to bear. AI consumption habits might put pressure on raw materials; increase carbon footprint; and accelerate global warming (Piao et al., 2023). On the other hand, if AI is used right it could encourage people to be more conscious of their consumption and health thus, decreasing its impacts on the environment in the long run.

Impact of AI Inclusion in the FMCG Sector

AI's integration into the FMCG sector has far-reaching implications, influencing various facets such as market dynamics, governance, consumer behaviour, employment, sustainability, and competition.

1. Market Perspective: AI technologies can help firms determine new trends, respond to customer needs, and set the right price levels. For instance, dynamic pricing algorithms control product prices as a response to changes in demand and competitor's behavior to give a competitive advantage. However, the effectiveness of such solutions may increase the gap between big companies and SMEs, as the latter cannot afford the latest technologies (Piao et al., 2023).

2. Governance Perspective: AI integration requires strong legal measures to overcome the challenges that touch on ethical issues, data protection, and fairness in artificial

intelligence models (Harsh Shivam, 2024). For example, some rules have to compel algorithmic systems to explain how they arrived at their decisions especially when pricing products dynamically or when creating and deploying targeted advertisements (Mathias, 2025). Lack of regulation may cause organizations to take advantage of consumers in areas like influencing their behavior or completely ignoring the existence of some groups of consumers. The government also needs to consider cybersecurity threats because AI systems that will process users' personal information are rather easy targets for hackers.

3. Consumer Perspective: AI has the potential to improve consumer experiences through a recommendation of specific products, quick delivery of services or products, and better access to such products. Different customer relations and interactions become efficient and fast through the use of chatbots and virtual assistants (Mukhopadhyay et al., 2024). However, these benefits are accompanied by costs, which include data misuse, loss of privacy, and algorithmic discrimination. For example, AI algorithms might disadvantageously filter out rural consumers with low levels of digital interaction and, thereby, result in service disparities.

4. Employment Impacts: The use of AI in manufacturing and logistics presents major problems to employment especially for low-skilled workers. The workforce in India is losing its jobs as more warehouse operations and delivery services are in the process of automation (Infosys, 2018). On the other hand, it results in the emergence of new high-skilled positions like data analysis, algorithms creator, and systems administrator.

Such training interventions are critical to closing the gap and facilitating diversity in the AI-led FMCG industry.

5. Sustainability Impact: AI can also be used to enhance sustainability as it can help reduce the wastage of resources. Tools such as state of health tools for instance enhance the durability of equipment and reduce energy usage. Artificial intelligence-based logistics platforms improve the efficiency of delivery by cutting down the fuel consumption and emissions (Mukhopadhyay et al., 2024). Yet, the rise of production achieved by the application of AI in marketing might put a lot of pressure on the available natural resources and intensify the deterioration of the environment. To address these risks, policymakers and industry leaders need to ensure that the application of AI aligns with sustainability objectives.

6. Competitive Dynamics: The heightened adoption of AI increases rivalry in the FMCG industry, particularly for large-scale firms that cannot finance such technologies. SMEs may be overwhelmed hence the expansion of market inequalities (Dhadurya Naik M et al., 2023). Moreover, the increase in AI participation in the e-commerce industry has become a problem for conventional stores, especially in rural areas. The government therefore needs to set measures that will help avoid the market shifts created by AI to negatively affect the small traders or cause significant shocks to local economies.

Conclusion

AI is therefore posited here as a transformative opportunity for the FMCG sector in India to augment operational and consumer value alongside sustainability improvements. But it also sends system risks and ethical issues, which require strict legal requirements and good governance. The move from loosely coupled system inefficiencies to tightly coupled systems through the adoption of AI calls for careful consideration of risk chain effects as well as shared value creation. There are certain guidelines that need to be set for policymakers, these include: ethical use of artificial intelligence and machine learning, transitioning and including all workers into new roles, and lastly sustainability. Thus, by introducing AI technologies as per such impulses as inclusiveness and sustainability, the FMCG sector in India has a historical opportunity to create a positive impact and by encapsulating the positive impact of AI technologies, ensure that it would be beneficial for generations to come.

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