Iot Realizing Consumer's Behaviour For Managing Marketing Strategies

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ARTICLE INFO	ABSTRACT
	In the realm of the Internet of Things (IoT), consumer devices such as coffee makers and smoke detectors are interconnected with the Internet, thereby extending the Internet's reach into the physical domain. The ability of these technologies to collect and share data from the user's environment will affect long-standing ideas in the body of marketing literature. We focus on managing client relationships, controlling the life cycle of products, and creating business models in order to offer a distinctive contribution. We also examine how these domains are affected by the enhanced capabilities of Internet of Things (IoT) devices. By carefully analysing the most recent developments in both theory and practice, we systematically arrive at ten research hypotheses. The report concludes with a summary of the results and a list of prospective directions for further study in marketing management with an IoT focus. **Keywords:** Internet of Things, Consumer Behavior, Marketing Strategies, Digital Marketing

Introduction:

Recently, there has been an increase in the number of newly launched items that are capable of perceiving their surroundings and exchanging information with consumers, other products, and/or corporations through the Internet of Things (IoT). All of daily products like toothbrush, Tennis Ball, Running Shoes, gym products etc. share the characteristic of enhancing the fundamental features of conventional products by offering the added capability to gather and exchange data through the Internet. These products, which are capable of collecting and sharing data, are referred to as IoT-ready products, or simply IoT products. [1,2]
While numerous items are currently advertised as "smart," the prevailing stage of advancement in most industries is undoubtedly the Internet of Things (IoT) stage, which emphasizes the connectivity of objects. IoT goods are commonly used in several areas such as healthcare, home automation, retailing, and transportation. Several industries are currently progressing towards the implementation of intelligent products, exemplified as the emergence of autonomous vehicles in the automobile industry. However, IoT products are relatively new. These unique functions of particular relevance in marketing theory have the potential to alter the perspective and effectiveness of well-established marketing principles. [3] The primary contribution of this paper is the identification and discussion of possible paradigm shifts in specific areas of marketing management for consumer products. Additionally, it aims to propose and inspire research propositions that will advance marketing theory in the context of the Internet of Things (IoT) era. Therefore, it aligns with other recent works that explore similar subjects.

IoT Entities and their Influences
a. Management of marketing strategies influenced by IoT in India:
The scholarly literature on IoT-related subjects can be traced back to early articles on ubiquitous computing, which align with the concept of information technology permeating "the fabric of everyday life until they become indistinguishable from it." Since its inception at the Auto-ID Centre at the Massachusetts Institute of Technology, the technical discourse surrounding the Internet of Things has acquired significant traction in multiple areas, such as ambient intelligence, human-computer interaction, and smart cities.[4-6] The emergence of the Internet of Things is accompanied by an abundance of technical literature on wireless sensor

networks and closely connected disciplines such as sensor technologies, wireless communication, layered architectures of digital technology, as well as energy consumption, supply, and harvesting. Most technical books briefly mention economic potential, typically just in the introduction or motivation section. While the technical parts of the Internet of Things have been a topic of discussion for over two decades, a significant economic conversation just began in recent years.

The contemporary smartphone can be seen as a catalyst not just for practical Internet of Things (IoT) applications, but also for conversations regarding the potential influence of IoT on industries, markets, enterprises, products, services, and customers. The current economic literature on IoT and smart products primarily examines research questions related to management, transportation, supply chain management, market competition, new business models, consumer attitudes towards autonomous products, organizational structure of companies, production planning and control, privacy and secrecy, wearable devices, smart home, and ambient assisted living, among others [7,8].

Marketing management finds IoT goods particularly intriguing because of two novel functionalities known as "product analytics" and "remote access."

Product analytics relies on the autonomous collecting of usage data from the customer's surroundings to give firms with insights into the actual product usage. Remote access provides the ability to operate the IoT product from a distance, allowing for the modification of product attributes, activation and deactivation of functions, and control over incoming data. Product analytics and remote access, whether used independently or in combination, offer a multitude of novel prospects for marketing management [9-11].

b. Customer Relationship Management (CRM):

This area of study initially originated from the management of relationships. Today, it focuses on the incorporation of customer-centric connections and the utilisation of systems that gather and evaluate data throughout the organisation. CRM solutions are designed to connect and generate value for both the organisation and the customer throughout the value chain. [12] A significant turning point in the advancement of CRM occurred when there was a shift in focus from product-centered approaches to customer-centered approaches. Initial research on customer relationship management (CRM) expanded upon the concept of satisfying client requirements rather than solely focusing on product sales.

Subsequent developments in the CRM domain encompassed the concept of cultivating interpersonal connections. Regarding this matter, theory development focuses on constructing customer relationships, strategic partnerships, alliances, and networks, as well as shifting from transaction-based to relationship-based paradigms and emphasizing service relationships. In addition, Peppers and Rogers, along with Pine, directed the conversation about developing relationships towards the principles of individualized marketing and widespread customization. Another line of research on CRM highlighted the importance of markets and focused on market orientation and market focus. [13,14] This has transformed into a form of learning that is driven by market forces. Identified as a crucial aspect for success in CRM, corresponding learning relationships enhance a company's capacity to capture cross and upselling opportunities, lower expenses, generate word-of-mouth advertising, raise switching costs, and achieve other benefits.

The special section on customer relationship management in the Journal of Marketing in 2005 greatly enhanced research on CRM.

A CRM roadmap that the fundamental principle of CRM is the simultaneous generation of value. The concept of dual creation or co-creation of value is based on the idea of generating and distributing economic benefits for both the organization and the client. [15,16] The concept of the "schemer schema" has already explained this theory, which suggests that firms aim to maximise and exploit the customer surplus. The growing need for processed food products has resulted in a significant expansion of the Food Supply Chain (FSC) network. However, there are still inefficiencies in the system due to inadequate monitoring. In order to tackle this issue, it is necessary to align the Food Supply Chain Performance System (FSCPS) with the practices of Industry 4.0. This study categorises inefficiencies and proposes a model that utilises Graph Theory and Matrix Approach (GTMA) to examine the relationships between different qualities. The findings motivate industry managers, corporations, and stakeholders to establish a strong and effective decision-making framework. [17]

In recent times, there have been notable technological advancements that have greatly enhanced the CRM tool box. Since the 1980s, decision makers in CRM have witnessed a substantial rise in the accessibility of customer data. They have effectively managed these data by utilizing both hardware and software to gather information and track the various activities related to the management of the customer-firm interface. Currently, the Internet enables efficient communication and interaction with current and potential customers through many platforms including as email, social media, Facebook, YouTube, Twitter, blogs, and forums. [18-21] Furthermore, the measuring process has become an essential component in any CRM system, alongside these Internet-based technologies. Modern Internet-based CRM solutions facilitate the adoption of a customer relational orientation by enterprises.

c. Wireless Wearable Technology and Data Management:

Businesses with better corporate performance are more likely to draw conclusions from customer data. Conventional products frequently give businesses the opportunity to surreptitiously collect customer information at the point of sale, for example, by using video surveillance. However, traditional CRM concepts

that aim to collect data after the sale mostly rely on the customer's voluntary disclosure of information, as in the case of answering a survey. One of the most important aspects of product utilization in the Internet of Things (IoT) era will be the generation and gathering of customer data following a purchase. [22−24] Many novel IoT features, including remote product repair and customization and consumption-based charging, will need recording and analyzing the actual use of IoT devices. An enormous amount of data is produced in the consumer's immediate environment as they move from customer touch points to customer touch lines. CRM systems are now more focused on doing efficient data analysis, particularly in the area of "marketing analytics," rather than just gathering data, thanks to the emergence of "big marketing data." Product analytics that can handle large and often complex data streams with maximum accuracy and low latency are essential for real-time monitoring and management of the customer journey. Analytical procedures involving direct human engagement are not likely to be well suited for real-time product analytics. Technological advances in machine learning, deep learning, and cognitive computing have yielded promising results in real-time analysis of large volumes of unstructured marketing data.

We hope that by combining ideas and approaches from various fields, marketing researchers will improve CRM theory. In addition to real-time processing, IoT-related data analysis necessitates decentralization and, to some extent, on-board processing. Since most of the energy used by IoT devices is consumed by wireless data transmission, decentralized data analysis is necessary. It is imperative that CRM systems and product analytics integrate basic on-board data processing in order to prevent IoT devices from transmitting enormous volumes of raw data. In general, reducing data transmission—particularly when it is combined—can significantly reduce the energy consumption of wearable technology and other mobile and low-power Internet of Things (IoT) devices.

d. Product Life Cycle Management:
The notion of dissemination and adoption of innovations is the source of the product life cycle (PLC), which describes the several stages that a product goes through in its lifetime.

from the moment of its initial release on the market until its final demise. PLC theory states that during the first stage of a market launch, sales gradually increase together with rising production costs and higher prices for customers. [25] A peak in profitability and an increase in competition are characteristics of the growth stage. The market gets saturated during the third stage, referred to as maturity, which causes prices to drop and competition to rise. The fourth stage, known as decline, is a time when sales and profitability are both declining. The introduction of additional functions in contemporary Internet of Things products requires a reevaluation of the PLC's phases. Product analytics and remote access have a number of benefits from a business perspective that have the ability to challenge or replace the traditional phases of the product life cycle. It is possible to evaluate the performance and real-time utilisation of IoT products by looking at customer touch lines. As a result, the product's use can be changed remotely, its additional functions can be turned on or off, and software upgrades and additions can be carried out. Organisations can more easily and swiftly improve or maintain customer satisfaction by quickly providing remedies to problems with the IoT product in comparison to conventional offerings.

Compared to product analytics, remote access is a quicker way to guarantee customer happiness because it allows for remote IoT product repair. IoT devices are unlikely to see significant drops in customer satisfaction if an issue can be fixed without the customer's knowledge. Consequently, PLC of IoT products could transition from a sigmoid-like curve to a longer straight line or numerous sigmoid-like curves [26]. By utilizing real-time data obtained from the customer's environment, IoT solutions have the potential to supplant the need for service specialists. For traditional items, it is typically required for service technicians to physically visit the consumer in order to oversee the functioning of the device, gather data on its usage, and make any necessary repairs. A car mechanic relies on diagnostic software to assess the condition of a vehicle and detect possible causes of malfunctions. However, the mechanic need the physical presence of the automobile in her workplace in order to conduct the diagnostic tests. For an Internet of Things (IoT)-enabled vehicle, data on how it is used can be gathered from the customer's surroundings, performance evaluations can be done on the vehicle itself, and repairs may be carried out by remote access.

Product customization is currently a key area of focus in PLC theory. The literature on mass customization and personalization primarily examines the alignment of individual consumer requirements with customized product attributes. It also explores the various arrangements of production processes to achieve this objective. The concept of customization becomes more intriguing when considering real-time customization and personalization, which can only be achieved through the use of Internet of Things (IoT) goods. [27] Illustrations include customized dietary and exercise suggestions derived from ongoing monitoring of the user's real-time activity.

e. Development of a business model:
The concept of business models is revitalised since the introduction of new features in IoT products requires the development of new ones. The strategic elements of a company's value creation, delivery, and acquisition are contained in its business model. Value proposition, value generation, and value capture are its three core components. The extra advantages or benefits that a business offers to its clients are referred to as the value proposition. The process of creating and offering value to the client is referred to as value generation. The ability

of the business to keep some value for itself is referred to as value capture. Companies usually create these core elements along the four axes of what, who, how, and why. The business chooses the precise good or service it provides in the first dimension. The business defines and determines its target demographic in the second dimension. The company gives thorough descriptions of the technologies and processes it uses to create and deliver its distinctive value proposition in three dimensions. In the domain of the fourth dimension, the company formulates the justification for clients' readiness to pay for its goods and services. The traditional business model idea has recently been expanded to address sustainability concerns and encourage business model innovation. Sustainability concerns are usually included as an additional fourth essential element, also called "beyond profit," which includes the social and environmental aspects of economic activities. In terms of business model innovation, developments in academia and industry may need a business to develop or acquire new competences in order to modify its business model and keep up with technological breakthroughs. There are many opportunities for businesses to enhance their traditional business models as a result of the addition of new functionality to IoT devices. This can be accomplished by developing additional revenue streams by providing supplemental services. Moreover, the capabilities of IoT provide enterprises a multitude of alternatives for developing completely new business models in both mature and developing sectors.

Conclusion:

This report aims to enhance our comprehension of the influence of the Internet of Things on specific areas of marketing management. We have identified paradigm shifts in CRM, PLC, and business models and have developed research propositions connected to these developments. The identified paradigm shifts are anticipated to enhance the theory and practice of marketing management by incorporating the new capabilities of IoT devices. Additionally, we observe attractive research prospects in relation to other areas of marketing management. Regarding this matter, we anticipate that study in the areas of services marketing, branding, and pricing will particularly gain insights from the concepts offered in our paper. As the number of interconnected products, devices, and services continues to grow quickly, we anticipate that research on the effects of IoT features on marketing management will gain momentum and expand the existing body of knowledge.

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