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Internet of things and the future of digital marketing

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ABSTRACT

In the digital world these days, everywhere you look, traces of the Internet of Things (IoT) can be seen. Businesses will improve with the use of this technology because devices will be able to collect a huge amount of user information. . If this information is used appropriately, commercial activities are able to expand their activities, reduce costs and provide users with devices with more and better features. These devices are only allowed to be accessed by certain people because they contain a large amount of information. However, there are many concerns about these devices. Even though the technology is advancing day by day, the risks related to it also increase. With the trend of marketing toward digitalization, we are witnessing its spread in various businesses. But since the Internet of Things has a solution for every issue and challenge, it also has new and fresh solutions for this issue. In this article, an attempt has been made to explain the role of the Internet of Things in digital marketing.

1. Introduction

The concept of IoT has evolved due to its alignment with multiple technologies, real-time analytics, machine learning, commodity sensors and embedded systems. The concept of IoT has evolved due to its alignment with multiple technologies, real-time analytics, machine learning, commodity sensors and embedded systems (Nozari et al., 2023). The traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation) and others all contribute to network access on the Internet. The main means of achieving marketing goals is communication, and as communication in the world has undergone extensive changes in recent decades due to the evolution of information technology, marketing has also benefited from these changes and undergone changes. Of course, it should be noted that the existing theories in marketing can also be used in the new communication, because the basic needs and desires of humans have not changed and only the way to provide them has changed. Therefore, only marketing techniques and how to use them may have changed. Therefore, the basic concept of marketing, as Kotler says, which means satisfying the needs and demands of customers, is still valid in the era of the Internet of Things, but the methods used to recognize and satisfy these needs and demands have certainly changed. Moreover, over the past years, Internet technology has brought changes in the way marketing is done. The Internet of Things has

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brought about fundamental changes in Internet marketing and traditional marketing due to some of its special features(Nozari et al., 2023).

Also, due to the fact that shopping centers and stores have grown in the last decade, merchants are primarily looking for a way to sell quickly and easily and to avoid traditional marketing and sales that require high-cost and low-interest advertising. On the other hand, customers want to buy and meet their needs more easily with less energy and cost and more knowledge about products (Moeini et al., 2013).

Therefore, a paradigm called intelligent marketing with the Internet of Things approach was proposed to help find the best way to satisfy the needs of customers, which will be discussed in the following, and how it affects the satisfaction of customers' needs and the improvement of marketing.

2. Literature Review

The Internet of Things is known as one of the most necessary specialized areas of the future in information technology, and it receives great devotion from a wide range of industries. The Internet of Things provides an opportunity for computing devices, home appliances, and software to share information over the Internet. The Internet of Things allows objects to be controlled and controlled through the existing network, creating opportunities for greater integration of the physical world into computer-based systems, resulting in better accuracy, efficiency, and economic advantage (Aliahmadi et al., 2022). Protocols used in Internet of Things systems can have security issues that can affect the entire system. This article also includes the classification of security attacks in Internet of Things networks. We categorize different attacks into eight categories to help IoT users or developers better understand the risk of security flaws so that better defenses can be used (Nozari et al., 2022).

Some researchers developed a gas leak detection and prevention kit with IoT. In their research, a gas leakage system has been designed for the purpose of safety in life and performing social duties, and focusing on life-threatening exposure to explosions and injuries caused by gas leaks in industries, vehicles and homes. This Sisan, by using embedded systems and involving them in the Internet of Things, a system is obtained that enables us not only to notify the intended person, but also to obtain the gas leak. In the article, a system has been proposed that reduces the possibility of accidents and ensures safety due to the available electronics and technology (Najafi et al., 2022).

Some researchers reviewed empowerment technologies, challenges and issues. IoT (Internet of Things) is a new paradigm that provides a set of new services for the next wave of technological innovation. IoT applications are almost limitless as they enable the integration of the cyber world with the physical world. However, despite the enormous efforts of standards bodies, alliances, industries, researchers and others, there are still many problems that need to be addressed to achieve the full potential of the Internet of Things. These issues should be considered from different aspects such as enabling technologies, programs, business models, social and environmental impacts (Nozari et al., 2021). The focus of this article is the open issues and challenges of interest from the technological point of view. Just for clarification, we present the different views behind this pattern to facilitate a better understanding of IoT features. In addition, this comprehensive review provides insights into the most advanced IoT and emerging technologies (Eisapour et al., 2013).

Some researchers have investigated the emergence of the Internet, a great change has been created in the world, and with the increasing acceptance of people, the activists in the field of technology and technology are thinking about using the Internet in different parts of people's lives. The use of Internet of Things in healthcare is growing day by day. Remote patient monitoring and reporting of clinical trials have attracted new attention. Not only patients are looking for better solutions, but medical organizations

are also looking for solutions to improve economic activity, reduce costs and risks, and increase security to improve the quality of healthcare. Undoubtedly, the Internet of Things technology has significantly changed the health industry. The Internet of Things continuously provides innovative tools with various capabilities that aim to create an integrated healthcare system, with the perspective of ensuring better patient care and reducing costs (Aliahmadi et al.,2022).

Despite the research done, more studies are needed to improve the current technologies and new efforts and Internet of Health technologies to overcome the challenges ahead. The presented results can be used as an important source of information for health service providers, researchers, technology experts and the general public to improve the Internet of Things for health care (Tootian et al., 2022). Other scholars have conducted a study under the title of intelligent interactive marketing with the Internet of Things approach. Today, the Internet of Things has caused change and transformation in all aspects of daily life, including business, in the meantime, the rapid development of communication and computing has provided a more suitable context and opportunity for this change and transformation and created a new generation of marketing under the marketing paradigm. Interactive has become intelligent. This new generation of marketing, because customers are not only looking to satisfy their basic needs in shopping and are interested in having their opinions applied to the purchased products, was felt a long time ago. In this article, intelligent interactive marketing was investigated with the Internet of Things approach, and the effects of this method on traditional marketing and meeting the needs of customers were investigated (Chen et al., 2022).

3. Internet of Things and modern marketing

Due to the great potential that the Internet of Things has, we can use the Internet of Things in various fields as a new model of modern wireless telecommunications. Using the Internet of Things, customers can receive software from the mall's server as soon as they enter the mall and thus become a member of the mall's smart system (Rahmaty , 2023). The software received from the shopping center, while welcoming the customer, receives information about the customer's interests and provides the possibility of introducing suitable places for shopping according to the customer's interest. In other words, the customer gets to know about what is available in the mall, and this software and interactive system provides more services and special offers to the customer even if the customer does not want to buy (Ghahremani-Nahr et al., 2021).

In addition, the system sends all the current stock of the product to the software to respond quickly to the customer, and the customer can find out about the number of product stock for purchase. Because in traditional marketing, marketing had become a bad concept due to marketers' focus on unethical profits such as pricing fraud and false claims instead of focusing on what the customer really needs and wants. In modern marketing, efforts were made to improve the marketing concept by evolving the concept of marketing and moving towards customer orientation. This type of evolved marketing, in which the focus is on customer orientation and humans are presented as creative and anxious agents, is called intelligent interactive marketing (Bayanati et al., 2023).

Nowadays, with the existence of social networks, the experiences of users regarding the use of a product have become very important and these experiences are integrated with the information obtained from searches made through internet search engines and have an effect on the user's decision to choose and buy a product. Apart from this, the new inferred information can be shared with other users through tools such as mass media and social networks and be influential in the choice of other users to buy a product (Gharachorloo et al., 2021). Despite the fact that virtual environments provide information about many products directly using user opinions, user experiences and information provided by the

manufacturer, they have limitations that prevent their widespread use. In general, these limitations can be stated as follows:

- Online design and the inability of all users to access them
- Their focus on specific sectors and products

Unable to integrate information due to the existence of different opinions from different users regarding products from different manufacturers, and due to these reasons, we propose smart marketing with the Internet of Things approach and investigate it. Smart marketing with the Internet of Things approach can have two important benefits (Salehi Koocheh Baghi et al., 2021). First, it provides the possibility of consulting and using the experiences of customers, and secondly, the possibility of confirming the facilities and features that products express in relation to their supplied goods is provided through the possibility of wide communication that is possible through the Internet of Things (Ghahremani-Nahr et al., 2022). Figure 1 shows the framework of intelligent marketing system based on Internet of Things.

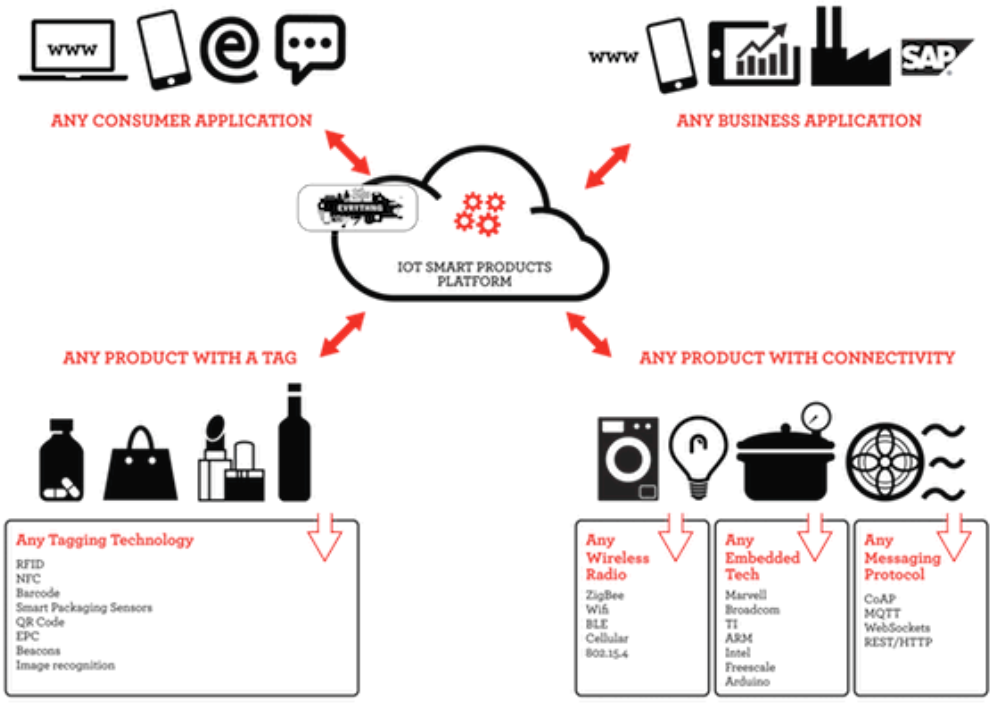

Fig. 1. IoT base Marketing

IoT will take marketing to a new level, no part of life, no product, no service and no solution will be unmarketable. Currently, the Internet has penetrated many of our daily behaviors. Since we all have an interconnected interaction, behavior and life; Therefore, with the advent of the Internet of Things, marketers will enter our lives deeper and provide us with what we want. Every consumer application, every business application and every product will converge with the data generated from our objects (Alvandi et al., 2022).

Smart and interactive marketing based on the Internet of Things can provide the information needed by the customer at the same time and upon request, 24 hours a day, seven days a week, and this means more interaction, better service and faster response to the customer. The methods of establishing

communication in the Internet of Things are different and these methods allow marketers to be aware of the changing needs of customers and adapt their marketing strategies to these changes (Rafierad et al., 2022).

4. Conclusion

Nowadays, with the existence of social networks, the experiences of users regarding the use of a product have become very important and these experiences are integrated with the information obtained from searches made through internet search engines and have an effect on the user's decision to choose and buy a product. Lays. One of the advantages of the Internet of Things is that it can provide the possibility of consulting and using the business of customers, which is of great help to marketing managers. Another advantage of intelligent interactive marketing with the Internet of Things approach is the possibility of collecting information about customers through online surveys. The Internet of Things provides a huge amount of data that brings deeper and key insights about customers. Data from smart devices is used to understand consumers' daily lifestyles. This allows digital marketers to promote products based on the collected data. Using this information, companies can provide advertisements tailored to each customer. This ability facilitates communication marketing and implementation of loyalty programs. This helps to target the audience more accurately and improves the effectiveness of the marketing campaign. As it can be seen, the Internet of Things will not only change technology and other issues, it also has a great impact on marketing and its effective implementation, and by using it, smart marketers can predict the issues that will change and take appropriate actions.

Therefore, intelligent interactive marketing based on the Internet of Things has contained various advantages for marketers, and for this reason, companies are looking to move from traditional marketing and Internet marketing to intelligent interactive marketing based on the Internet of Things.

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