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THE INFLUENCE OF INTERNET OF THINGS (IOT) ON DIGITAL MARKETING STRATEGY

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Abstract

The Internet of Things (IoT) has been a technological innovation that has had a significant impact on digital marketing strategies. IoT enables the collection of more complex consumer data through connected devices, creating opportunities for personalisation and optimisation of marketing campaigns. With more in-depth data analysis, companies can devise more relevant and effective strategies to increase customer engagement and loyalty. In addition, IoT strengthens the consumer experience through location-based promotions and real-time interactions, providing added value in building brand relationships. However, IoT deployment also presents challenges related to data protection and user privacy, which require serious attention from companies. With proper management, IoT offers tremendous potential to transform the digital marketing landscape to become more responsive and data-driven.
Keywords: Influence, Internet of Things (IoT), Digital Marketing Strategy

Introduction

In the era of the Industrial Revolution 4.0, technology continues to develop rapidly, affecting almost all aspects of human life, including how businesses are run. One technological innovation that has great potential is the Internet of Things (IoT). The Internet of Things (IoT) is a concept in which various physical devices are connected to each other via an internet network, allowing them to send, receive, and share data (Vial, 2019) . These devices include everything from household appliances such as refrigerators and lights, to industrial devices such as factory machinery and environmental sensors. By incorporating communication technology and sensors into these devices, IoT creates an ecosystem where information can be collected and analysed in real-time. This allows devices to interact with each other and operate with a high degree of automation, without requiring direct human intervention (Rose, 2016) .

IoT plays an important role in the modern business world, providing various benefits that can support operational efficiency, improved customer service, and the creation of innovative business models. One of the key benefits of IoT is its ability to collect and analyse data continuously, which companies can use to understand consumer behaviour, predict market trends, and identify improvement opportunities (Green et al., 2006) . IoT also enables business process automation, which not only reduces operational costs but also improves responsiveness to consumer demand. In addition, IoT can help companies strengthen customer relationships by providing more personalised and timely services. With IoT, companies can also develop new products and services that are smarter and more connected, thereby expanding business

opportunities and creating added value for customers. This technology brings significant changes in various sectors, especially in digital marketing strategies (Kane et al., 2015) .

In the world of digital marketing, IoT helps companies understand consumer behaviour more deeply through data generated from smart devices such as smartphones, wearable devices, smart home appliances, and connected vehicles. Smartphones are smart devices that are at the centre of many daily digital and communication activities. Equipped with advanced features such as internet connectivity, location sensors, high-quality cameras, and diverse applications, smartphones not only function as communication tools but also as personal and professional life management tools (Yoo et al., 2010) . With the development of technology, smartphones are also becoming the main controllers in the Internet of Things (IoT) ecosystem. For example, users can use smartphones to manage other smart devices such as home lights, CCTV, or thermostats through specialised apps. With its flexibility, smartphones have become an essential tool in the integration of IoT technologies that help improve user productivity and convenience (Gartner Research, 2022) .

Wearable devices, such as smartwatches, fitness trackers and smart earbuds, are wearable devices designed to provide real-time information and support users' physical activity and health. These devices are equipped with sensors that monitor heart rate, sleep patterns, physical activity, and even stress, thus providing valuable data to both individuals and medical professionals. On the other hand, smart home appliances, such as smart speakers (e.g. Amazon Echo), smart lights, or smart fridges, offer new ways of managing the household (Acquisti et al., 2015) . These devices are able to interact with users through voice commands, automation, and integration with IoT systems, creating a more efficient, safe, and energy-efficient home. With the presence of these two types of devices, people's lives are becoming increasingly connected and accessible, shaping a more modern and technology-based lifestyle (Hess et al., 2016) .

This is driving companies to create marketing approaches that are increasingly personalised, relevant and responsive to consumer needs. Using IoT, companies can utilise technologies such as geolocation, data analytics, and automated interactions with consumers to create more effective marketing experiences (Deloitte Insights, 2019) .

However, behind the great opportunities that IoT offers in digital marketing, there are a number of challenges. Firstly, the level of IoT adoption among businesses is still uneven. Many small and medium-sized companies do not fully understand how IoT can be integrated into their strategy. Second, managing big data generated from IoT devices requires adequate technology infrastructure and expertise. Third, the issue of data security and consumer privacy is becoming an important concern, given the

increasing amount of personal data collected and used by companies (Kotler & Keller, 2016) .

Therefore, it is important to explore the influence of IoT on digital marketing strategies, both in terms of opportunities and challenges faced. This research aims to identify how IoT can be optimally utilised to support digital marketing strategies, as well as provide recommendations for businesses to overcome existing barriers. Thus, the results of this study are expected to help companies utilise IoT technology to increase effectiveness and efficiency in digital marketing.

Research Methods

The study in this research uses the literature method. The literature research method is an approach that is carried out by collecting, reviewing, and analysing information from existing sources, such as books, scientific articles, journals, theses, research reports, or other references. This method aims to understand a particular topic by using previously published secondary data as a theoretical basis or comparison (Silverman, 2015) ; (Rossi et al., 2004) . Literature research is often used to explore ideas, identify research gaps, or build arguments based on relevant findings from previous studies. In the process, researchers must be critical of the quality of the sources used, and ensure their accuracy, relevance and contribution to the research study being conducted. This method is particularly useful for building theoretical frameworks, supporting hypotheses, or formulating recommendations for further research (Jesson et al., 2011) .

Results and Discussion

IoT Impact on Digital Marketing Strategy

The Internet of Things (IoT) has brought significant changes in various aspects of business, including digital marketing strategies. With more and more devices connected to the internet, companies have access to huge volumes of important data, which can be used to better understand consumer behaviour and market trends. Data from IoT devices, such as smartphones, wearable devices, and smart home appliances, allow marketers to gather real-time insights into customer interactions and preferences. This brings the potential for more personalised and targeted marketing strategies, addressing consumer needs more precisely (Kotler et al., 2017) .

In terms of personalisation, IoT allows marketers to create experiences tailored to individual needs and wants. For example, data obtained from the use of wearable devices can provide information about a user's lifestyle or habits, which can then be processed into relevant product recommendations. In addition, the use of beacons in physical retail environments enables the delivery of special offers directly to consumers' smartphones when they are in a particular location, significantly increasing the chances of conversion (Rayport & Sviokla ., 2005)

The adoption of IoT in marketing strategies also has an impact on improving the effectiveness of advertising campaigns. Data received from various IoT devices can be used to analyse the effectiveness of marketing campaigns, thus enabling faster and more precise improvements in promotional strategies. With a better understanding of what works and what doesn't, companies can increase the return on investment (ROI) of their digital marketing initiatives (Roberts & Grover, 2012) .

Furthermore, IoT also introduces new opportunities for interaction and engagement with consumers. For example, smart household products such as smart speakers can be used as a channel for two-way interaction with customers. Through these features, companies can offer assistance, answer questions, or even introduce new products directly, creating a more interconnected and continuous customer experience (Bowersox et al., 1999) .

IoT also has important implications for data collection and analysis. With so much data being collected, the need for powerful data analysis and artificial intelligence (AI) tools is becoming increasingly important. Enterprises must be able to automate the data collection and analysis process to gain useful and reliable insights. This demands more sophisticated data analytics capabilities as well as adequate technology infrastructure to support the processing of large amounts of data (Li, 2020) .

While it offers many opportunities, implementing IoT in digital marketing strategies also presents challenges. Data privacy and security issues are major concerns that must be addressed. Collecting data from multiple sources requires strict and transparent protection policies to safeguard consumers' personal information. Companies must ensure compliance with data protection regulations, such as GDPR in Europe, to avoid breaches that could damage reputation (Piccoli & Ives, 2005) .

IoT also requires the integration of different platforms and systems, which can sometimes be technically challenging. Companies must invest in technology solutions capable of integrating data from various devices and platforms to get a complete picture of customer behaviour. The need for skilled and talented technical teams to handle complex IoT systems is also increasing, demanding various adjustments in terms of employee training and capability development (Turban & Volonino ., 2018)

Overall, the impact of IoT on digital marketing strategies is profound and far-reaching. By harnessing the immense potential offered by IoT-from personalisation, to advanced analytics to innovative customer interactions-companies can design more effective marketing strategies that touch consumers on a more personal level. However, to reap the maximum benefits, it is important for companies to overcome the challenges and do so thoughtfully and responsibly.

Benefits of Utilising IoT in Digital Marketing

The Internet of Things (IoT) has brought many changes in various aspects of life, including in the world of digital marketing. The utilisation of IoT provides significant

benefits that can help companies improve the effectiveness of their strategies. One of the main reasons is the ability of IoT to provide more specific and real-time data related to customer behaviour. IoT devices such as smartphones, wearable devices, and smart home sensors serve as data collectors that allow companies to understand consumer preferences more deeply (Arun & Heeks ., 2005)

Another benefit lies in IoT's ability to support more effective personalisation. In digital marketing, personalisation is key to attracting audience attention. With data obtained from IoT devices, companies can deliver messages that are more relevant to the needs or preferences of each consumer. For example, if the devices in a consumer's home show that residents are more often looking for information about a particular product, then appropriate advertisements or promotions can be delivered directly to their devices without having to go through the general approach (Porter & Heppelmann ., 2014)

IoT also enables enhanced customer experience through more sophisticated service integration. In the IoT ecosystem, companies can connect various platforms, such as e-commerce, social media, and consumer devices in one operational system. This accelerates the response to customer needs. When a consumer makes a purchase through an IoT device, they can receive interactive product support or recommendations shortly after the transaction is made, thus increasing their loyalty to the brand (Porter & Heppelmann ., 2014)

Furthermore, IoT technology enables the marketing process to be more predictive. IoT-connected tools, such as sensors, cameras, or other smart devices, can provide deep insights into market trends. By analysing the data obtained, companies can forecast future customer needs and design more proactive campaigns. This not only improves marketing effectiveness, but also helps companies manage product stocks and resources more efficiently (Sebastian et al., 2017) .

In addition, IoT helps companies optimise marketing strategies by utilising big data. The amount of data generated by IoT devices is huge, and if processed properly, this data can provide invaluable insights for companies. With advanced analytics tools, companies can analyse purchasing patterns, browsing habits, or consumer location to craft campaigns focused on specific target markets (Teece, 2007) .

Cost efficiency is also one of the important advantages of IoT in digital marketing. With automation and real-time data collection, companies can cut operational costs such as manual surveys, separate deliveries, or inefficient mass advertising. IoT ensures that marketing is done more effectively without excessive investment, so companies can still maximise profits with affordable capital (Mikalef & Krogstie ., 2020)

The ease of interaction is also another attraction of IoT to support digital marketing. IoT devices provide opportunities for companies to communicate directly with customers through interactive features. For example, chatbots integrated with smart devices can provide solutions or product information within seconds to

consumers, without the need to wait. This creates a closer relationship between brands and customers, and increases the selling point of products in the eyes of consumers (Chanias et al., 2019) .

Overall, the utilisation of IoT provides long-term benefits to the digital marketing world. Not only does it help companies improve campaign effectiveness, but it also provides a better customer experience. As IoT technology continues to evolve, companies will increasingly be able to meet the needs of personalisation, accelerate business processes, and strengthen their position in the market competition. The utilisation of IoT in digital marketing is not just a trend, but a strategic solution to meet the increasingly complex digital era.

Challenges in IoT Implementation in Digital Marketing

The Internet of Things (IoT) opens up new opportunities in digital marketing by enabling companies to utilise data collected by smart devices to create smarter and more personalised marketing strategies. However, the implementation of IoT in marketing is not always smooth sailing, and there are a number of challenges that need to be overcome for this implementation to be effective. These challenges relate to aspects of technology, privacy, security, human resources, and regulation (Roberts & Grover, 2012) .

Firstly, the main challenge in implementing IoT in digital marketing is the complexity of the technologies involved. IoT requires integration between hardware, software, and analytic tools to process the data generated. This can be a barrier for companies that do not have sufficient technical capabilities. For example, many small and medium-sized businesses struggle to understand or manage IoT technology infrastructure. The inability to integrate IoT data with existing digital marketing systems will lead to minimal effectiveness (Matt et al., 2015) .

Second, privacy issues are a serious concern in the use of IoT for marketing. IoT devices are capable of collecting real-time user data, such as location, habits, and preferences. While such data is useful for more personalised marketing strategies, the collection and use of personal data often raises concerns among consumers regarding how their information is stored and used. If customer trust in the company decreases due to negligence in handling privacy issues, the company's reputation can also be significantly affected (Chatterjee & Kar, 2020) .

Third, the data security aspect is another big challenge. IoT devices connected to the internet are vulnerable to cyberattacks such as hacking or data theft. In the marketing world, such attacks can lead to the leakage of customer data, which not only harms the affected individuals, but also creates legal risks and loss of company credibility. Implementing IoT systems requires stringent security measures, which often require large investments in data protection technologies (Chaffey & Ellis-Chadwick, 2019) .

Fourth, human resource capabilities are an obstacle to IoT implementation. While IoT offers new opportunities, many companies lack a workforce with specific expertise in utilising IoT data for digital marketing. Staff training and development is an important requirement, but this process is time-consuming and costly. Lack of expertise can hinder the effectiveness of IoT-based marketing campaigns (Kannan & Li, 2017) .

Fifth, regulatory challenges also need to be considered. Regulations related to data collection, privacy, and IoT utilisation vary widely across countries. Companies must ensure that they comply with the regulations applicable in their areas of operation, which often requires adjustments to technology approaches and internal processes. Legal sanctions and fines can be a serious threat to businesses that fail to follow regulations (Bharadwaj, 2000) .

Sixth, interconnectivity and interoperability between IoT devices is a technical problem that companies often face. Many IoT devices have different operational standards, making it difficult to connect and function optimally in one ecosystem. This challenge makes it difficult for companies to utilise all the data generated by IoT devices in an integrated manner, so data-driven marketing goals are often not fully achieved (Davenport, 2006) .

Seventh, the cost of IoT implementation is a major challenge that cannot be ignored. IoT implementation requires a large initial investment, both for hardware, software, and supporting infrastructure. In addition, the operational and maintenance costs of IoT systems are also quite high. Companies that do not have a large enough budget often find it difficult to take full advantage of this technology (Kohli & Grover, 2008) .

Finally, customer awareness of IoT in everyday life also has an influence. Although more and more people are using smart devices, not all customers fully understand how their data is used by companies in marketing strategies. Lack of transparency can lead to a disconnect between customer expectations and company approaches, hindering the effectiveness of IoT marketing efforts (Manyika, 2011) .

Thus, while IoT offers great potential in digital marketing, the challenges mentioned above need to be addressed wisely. Companies should invest time, resources, and expertise to overcome these obstacles in order to make the most of IoT and build strong relationships with customers.

Conclusion

The Internet of Things (IoT) has a significant impact on digital marketing strategies by bringing the ease of personalisation and consumer data collection. IoT enables smart devices to collect, analyse and share information in real-time. This allows companies to understand consumer preferences, habits, and behaviours in greater depth. With more detailed data, marketing strategies can be made more specific and relevant, which in turn increases campaign effectiveness and conversion rates.

In addition, IoT also directly enhances the consumer experience through more immersive interactions. IoT devices such as wearable devices, smart home appliances, and smart vehicles create opportunities for companies to provide dynamic promotions or services based on location and specific customer needs. By utilising IoT, digital marketing can better connect with consumers at the right time and place, thereby strengthening brand relationships and creating long-term customer loyalty.

However, the application of IoT in marketing also presents challenges mainly related to data security and consumer privacy. Companies need to ensure that data obtained from IoT devices is managed securely and in accordance with data protection regulations. A successful IoT-based marketing strategy requires both advanced technology and high trust from customers. Despite the challenges, IoT offers tremendous opportunities to transform the way companies design and implement more effective and responsive digital marketing strategies.

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