The Influence of Digital Technology in the Digital Marketing

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ABSTRACT

Nowadays, with the rapid development of science and technology, digital technology has been widely used. Many people use kinds of digital platforms, like Amazon, YouTube and Zoom. These digital platforms provide different functions, like online shopping, watching videos, and online meeting. At the same time, many companies use big data to market their products so that many people could use their products. A marketing mix is a strategy that a company uses to market its product. The purpose of this paper is to find out how digital technology will influence the marketing mix. This paper studies the influence of digital technology on the 4Ps (product, price, promotion, and place) marketing mix by using digital platforms and big data as two examples. This research concludes that digital technology plays a role in the 4Ps marketing mix. Thus, more research is needed to understand how digital technology influences the four Ps marketing mix in general. The contribution and limitation were also discussed at the end of this paper.

Keywords: digital technology, digital platforms, big data, marketing mix

1. INTRODUCTION

Nowadays, digital technology has played a great role in our modern society. People have started to use many products with digital technology in daily life, such as smartphones, search engines, online social media, and kinds of applications. At the same time, digital technology is really important for many companies, like Google and Facebook, since many of their products are using digital technology. Digital technology has brought a lot of changes to our society.

One of these changes is that many companies change their marketing strategy. The use of social media in marketing is one of the changes in marketing strategy. Many people worldwide could access the Internet and use kinds of digital platforms, such as social media. It is a great opportunity for companies to market through social media. By marketing on these social media, companies reached their marketing objective and gained benefits [1]. In an era of digital technology, marketing through social media is an important step for companies to change their marketing strategy. At the same time, big data plays a great role when companies change their

marketing strategy. Big data is a large volume of data collected from kinds of channels, like digital platforms. By using statistical modeling techniques, marketers analyze big data to get useful information for helping companies to make decisions on marketing strategy [2]. So, both digital platforms and big data help companies to make a new marketing strategy.

In an era of digital technology, companies need to adapt to the new business environment with digital technology. Both digital platforms and big data can help companies to make their decisions when they are deciding their marketing strategy. However, before digital technologies were widely used, neither digital platforms nor big data can contribute to companies' decisions on marketing strategy. The occurrence and the usage of digital platforms and big data have largely changed the ways company's markets. With such an influence, it is important to understand how digital platforms and big data can influence companies' marketing strategies.

Digital technology has brought an influence to the marketing strategy. Many researchers have studied

related topics in previous researches. Huarng et al. provided a summary to represent "the key insights of the selected articles on how technologies can assist improvement in various areas of business and management, including innovation, entrepreneurship, marketing, corporate social responsibility, the economy, and organizational behavior" [3]. The study from Dwivedi et al. showed that the effect of digital and social media marketing could bring both positive and negative results for organisms [1]. Rust and Espinoza examined the effect of technology on firms' ability to collect customer information [4]. Krishen et al. proposed a model for interactive digital marketing [5]. Gupta et al. found the effect of big data on improving the marketing performance of companies [6]. These researches found the effect of digital technology on marketing strategy. When companies develop their marketing strategy, they use a marketing mix for help. There is a gap concerning the effect of digital technology on the marketing mix.

The research question of this article is to find the role of digital technology in the marketing mix of companies. First, this study reviews the definition of the marketing mix. Next, this paper uses the digital platform and big data as two examples to show how digital technology influences companies to use the marketing mix to decide their marketing strategy.

2. LITERATURE REVIEW

Marketing is an important factor in companies' success, and it is a channel for companies to connect with their customers. There are many successful marketing strategies, but marketing mix is important for companies to decide how to market their products.

Neil H. Borden first introduced the concept of the marketing mix. Later, Edmund Jerome McCarthy represented the four Ps marketing mix: product, price, place, and promotion [7]. Currently, the marketing mix is often referred to as the four Ps, and the concept of the four Ps is widely used in marketing. In this paper, the research will focus on how the four Ps are influenced by digital technology in the era of digital technology.

2.1. Marketing Mix

In the twentieth century, the idea of marketing mix occurred, and later, the marketing mix concept occurred. Silverman mentioned the work of Ralph Starr Butler, Arch Wilkinson Shaw, and Paul D. Converse inspired later authors to wonder how the functions of marketing were to be combined and integrated [8]. All of them contributed to the development of the marketing mix. Butler defined marketing as everything the promoter of a product has to do before his actual use of salesmen and advertising [9]. Shaw defined the agencies of demand creation as 'middlemen' (i.e., distributors), 'direct salesmen,' and 'advertising', and also defined

organization of demand creation as 'analysis of the market' (i.e., market research), and 'price policies' [10]. Converse and Harvey W. Huge defined product, pricing, distribution, advertising, and selling as the major marketing elements in a firm and emphasized the critical need to coordinate all aspects of the organization to meet customer needs better than competitors [11].

James W. Culliton described the role of the marketing administrator as a 'mixer of ingredients' [12]. Inspired by his idea, Neil H. Borden introduced the marketing mix concept in his article The Concept of the Market Mix [13]. In his article, there were twelve elements of the marketing mix. These elements were product planning, pricing, branding, distribution channels, personal selling, advertising, promotions, packaging, display, servicing, physical handling, and fact finding and analysis. At the same time, he defined consumers' buying behavior, trade behavior, competitors' position and behavior, and governmental behavior as four marketing forces affecting the market mix.

Many scholars also put forward their insights on the marketing mix. Albert W. Frey proposed two major components of the marketing mix [14]. The first one is the offer, and the second one is the methods and tools. The offering included product, packaging, brand, price, and service. The methods and tools included distribution channels, personal selling, advertising, sales promotion, and publicity. John A. Howard suggested that the marketing manager used product, channels, price, advertising, personal selling, and location to 'fit' the company with the constraints of the environment (e.g., marketing law, competition, demand, non-marketing costs, the structure of distribution) [15]. Eugene Kelley and William Lazier created a framework of the marketing mix by specifying the marketing mix as comprised of sub-mixes and suggested that the interaction among three elements (goods and services mix, distribution mix, and communication mix) was the most important aspect of developing optimal returns and profits [16]. The goods and services mix included the product, packaging, brand, label, warranty, and associated services. The distribution mix had two parts. One of them was the channels of distribution, like middlemen and agencies. The other one was the physical distribution, like transportation and warehouse. The communication mix included all persuasive and informational elements, like advertising, sales promotion, and merchandising.

In 1960, Edmund Jerome McCarthy, largely based on the work of Frey, and Kelley and Lazer, introduced the concept of the four Ps (product, place, price, and promotion), and it became a standard to describe marketing mix.

Although the concept of the four Ps has become a standard and ended the academic discussion on

marketing mix, there was a great change and development in marketing theory and practice. At the same time, digital technology has brought a significant influence on people's life. It is necessary to adapt the concept of the four Ps to the era of digital technology.

2.2. Product

In the era of digital technology, the concept of a product is experiencing rapid change. Many products and services have become digital services. Like music and videos, many contents are available to customers by using information products, like software. In this situation, companies need to change their product strategy.

People can purchase kinds of products through retail apps. Within an app, it is necessary to provide various product lines and in-depth classification for a specific product category. At the same time, retailers need to give customers a guarantee for buying products.

As the result of the digital environment impacting product strategy, mass customization becomes an advantage for customers because they can configure their products and services with different features and options. Mass customization can bring customers higher utility with expertise [17].

2.3. Price

Through digital technology, pricing becomes different. Kannan and Li mention that "Digital products and services have very low or zero marginal cost for production and distribution" [17]. When products have both traditional and digital formats, the digital format can lead to a higher profit. At the same time, they also state that "the pricing for products and services online is more dynamic than in brick-and-mortar businesses", because of low customers' search cost, low retailers' menu costs, rapid changes in the shopping environment, the quicker response of retailers to customers' search [9]. One example of this phenomenon is that customers can purchase a product at a lower price in a retail app than in physical stores.

2.4. Promotion

Online retailers use emails and displays to reach their customers and recommend their products with collaborative filtering and adaptive personalization. Both email and display ads could attract customers to visit the website. Promotion is one way to attract customers to purchase. Monetary promotion is a kind of short-time incentive to stimulate the purchase of products at a lower price. Non-monetary promotion is a promotion strategy without a price deduction, and it provides benefits, such as free delivery. The benefit of promotion is a higher profit. Kannan and Li admit that "loyalty promotions

were more profitable in online stores than in offline stores, while the opposite was true for competitive promotions" [17]. At the same time, in a digital environment, for those categories that were promotion sensitive, the individual-level customized promotion is a significant way to increase profit, compared to segment- and mass market-level customized promotions.

2.5. Place

Many people use mobile devices, like smartphones and tablets. These mobile devices have become a new channel for marketing. For companies, it is easy for them to get data of customers' touchpoint on companies. Companies have various online marketing actions, and data can help them know the efficiency and efficiency of these actions. Companies also can use data to optimize their marketing spending.

3. DIGITAL TECHNOLOGY

Many things are related to digital technology, like the Internet, social media, games, and mobile phones. In this study, both digital platforms and big data are used as two examples to seek how digital technology will influence the company's decision on marketing strategy through the marketing mix. A digital platform is a place where data are generated. Companies can process data to receive useful information to help them make decisions on marketing strategy.

Figure 1. Six different types of digital platforms [18]

3.1. Digital Platforms

A digital platform is a common place where companies can market. There are kinds of digital platforms, like, social media, digital business platforms. Figure 1 shows six different types of digital platforms [18]. Different digital platforms have different characteristics. Take digital social media, for example. Many companies use different social media platforms for marketing, like Snapchat, Twitter, and Facebook [1]. Snapchat is regarded as "the most intimate, casual, and dynamic platform providing users with information,

socialization, and entertainment" [1]. Dwivedi et al. mention the effectiveness of Twitter for informative appeal, the suitability of Facebook for interactive entertainment posts, and the suitability of Instagram for interactive content combining informative-entertainment appeals [1]. These digital social media have different characteristics. Companies will take into account these characteristics when they are making their marketing strategies.

Digital business platforms, like Google and Uber Technologies, "designed expressly to use digital technologies to enable business interactions among authorized users", are another example of digital platforms [19]. For these digital business platforms, one of their advantages is that "the closed-loop nature of the data collection process enables the platform, its users, and its partners to run online experiments continually to improve offerings and rapidly evaluate the efficacy of potential business strategies and actions" [19]. The collected data from digital business platforms can help companies decide their business strategies.

These digital platforms are good channels for companies to market. Some models have been developed to understand how digital platforms play a role in digital marketing. As one of the digital platforms, social media has also become a place for customer's voices. Rangaswamy et al. show that "marketing is now required to identify and cater to the needs of all users on all sides of a platform, and its primary role is transitioning toward finding appropriate offerings for platform users and facilitating their various interactions" [19]. Through digital platforms, companies can gain useful information from their customers.

3.2. Big Data

In the era of digital technology, data are generated, collected, and processed through digital technology. The fast speed of the Internet, the easy-to-use smartphone, and heavy usage of kinds of digital platforms lead to the generation of a large volume of data. Big data is a large volume of a dataset whose size is too large to be dealt with traditional management tools or typical database software. Its role is to enhance the marketing performance of companies [6]. Companies could collect data through digital technology. Then, big data analysis provides useful information for companies. With useful information, companies can target potential customer groups with their needs. After targeting, companies use customized or personalized marketing strategies to attract customers to purchase their products. At the same time, machine learning uses data to help companies with the prediction of the future. Machine learning is "a specific subset of AI that trains a machine on how to learn by using datasets to develop automated, self-training models and integrating multiple methods such that the machine can identify patterns and hidden

insights without explicit instructions" [20]. The effect of machine learning is using prior data and patterns in behavior to develop algorithms that help companies to predict future behaviors and trends [21].

4. RESULTS

In the era of digital technology, digital technology has played an important role in marketing. Digital technology helps companies to know customers' needs and their expectations of products. At the same time, through digital technology, companies know customers' reviews and potential customers' behavior. Based on the information they got, companies can adjust their marketing strategy in time.

People often use kinds of digital platforms, like social media and digital business platforms. People use these platforms for kinds of purposes, like social interaction, purchase, searching. Although many companies may still use traditional marketing channels, like TV advertisements, and posters, for companies, these digital platforms can be another channel to market.

On kinds of digital platforms, data are generated through kinds of people's interactions. Through digital technology, companies can collect data from digital platforms. By processing data they've collected, companies can gain kinds of useful information and change their marketing strategy.

People have used kinds of products and services related to digital technology. Many companies also use these products and services to market. People use kinds of digital platforms, which becomes one reason companies choose to market on these digital platforms. Data provides companies useful information about their products and customers and helps companies decide their marketing strategy through the marketing mix. Digital technology influences the marketing mix. It provides useful information and more channels for companies to market. In the future, companies will still rely on digital technology to market.

5. DISCUSSION

Digital technology influences the marketing mix. Digital platforms become channels for marketing. Big data provides valuable information for companies. Companies can provide products and services through digital technology, market, and collect useful information from customers. The role of digital technology will not be just limited to marketing, while it can help companies a lot on marketing.

The previous researches showed the influence of digital technology, including the influence on marketing [3,4,21]. This paper shows the influence of digital technology on marketing. Some researchers studied the relationship between big data and marketing

performance and showed that big data enhanced marketing performance [6]. This study shows that data can provide useful information for companies to market. Many researchers studied marketing mix. In the era of digital technology, digital technology has changed a lot of things, including marketing. So, it is necessary to study marketing mix in a new business environment in which digital technology has brought a lot of changes. This study shows the influence of digital technology on the marketing mix through digital platforms and big data. The application of digital technology is shown in many aspects. Digital platforms and big data are two of these aspects. The influence of digital technology on the marketing mix can be shown in other ways, which is the limitation of this paper.

6. CONCLUSION

This paper has presented how digital platforms and data influence the marketing mix. This review shows that the digital platform is a channel for companies to market, and companies can gain useful information to market by analyzing data. Although traditional marketing methods, such as newspaper, television, and radio, are still effective marketing ways for many companies, companies should also consider digital platforms as another marketing channel. Analyzing big data helps companies understand customers' behavior and needs, which is useful for their marketing and product development. Digital technology has been widely used. Both digital platforms and data are two examples of digital technology. The influence of digital technology is not limited to these two aspects, and it can be studied in more depth. At the same time, companies should concern about how to get greater benefits from using digital technology. The use of digital technology should not be limited to marketing as two examples of digital technology, digital platform, and big data, play an important role in the marketing mix.

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