

# Digital Media Empower The Marketing Promotion of Health Management: A Case Study of KEEP APP

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**Abstract.** Fitness apps have grown in popularity in recent years, due to the fast-paced development of smartphones and the Internet economy, and people's growing demand for fitness has driven the number of fitness apps to a spurt in growth. This study aimed to explore users' continuous intention to use fitness apps under the influence of digital marketing via the theory of persuasion and the elaboration likelihood model (ELM). A web-based survey was conducted on users who are usually using fitness applications. According to the findings of this study, in the four measurement dimensions chosen, perceived usefulness, outcome expectations, and social interactions have positive and significant effects on the user's intention to continue using, whereas subjective norms have no influence on the user's continuous using intention. Thus, when promoting fitness apps and health management products through digital marketing, users' feedback on perceived usefulness, outcome expectations, and social interactions should be taken into consideration.

**Keywords:** Fitness application; Elaboration likelihood model (ELM); Digital marketing; Keep APP.

## 1. Introduction

### 1.1 Research Background

Over the last few years, with the fast development of Internet technology and the continued popularity of smartphones, mobile phones have gradually transformed from a tool simply for communication to an important intelligent assistant in our daily lives. By June 2022, the number of mobile phone netizens will be 1.047 billion, of which 99.6% will use mobile phones to access the Internet [1]. All kinds of mobile phone applications make people's lives more convenient. Meanwhile, the Chinese government has launched the outline of the 2030 plan for health management. It is necessary to improve the physical quality of the entire population, extensively carry out the national fitness campaign, and promote national fitness in daily life. The guidance of the policy reflects the importance of people's health management against the background of economic development. People's growing demand for fitness has driven the number of mobile fitness apps to a spurt in growth, and China's online fitness market has entered a stage of rapid development. Due to restrictions in China's COVID-19 dynamic zero-case approach policy, more and more people are choosing online fitness to get health management. Therefore, online fitness has entered people's health management lives with the characteristics of fragmentation and lightweight. The number of active users of online fitness continues to grow. The annual average monthly active users of online fitness members and fitness content increased from 1.4 million in 2016 to 138 million in 2021, and are forecast to reach 238 million in 2026, according to a related report by China Insights Consultancy [2]. In addition, the fitness marketplace is expected to grow from RMB 786.6 billion in 2021 to RMB 1,479.3 billion in 2026 [3].

Fitness apps typically refer to a third-party smartphone or portable device apps that provide a way for users to track fitness data and adopt a healthy lifestyle [4]. In China, Keep is the largest fitness app with the most users, mainly providing fitness courses, running, cycling, fitness diet guidance, equipment purchases, and other exercise solutions. The increasing popularity of fitness applications, along with the fast-paced development of smartphones and the Internet economy, has piqued the

interest of many sociology, communication, and sport science researchers. Recent theoretical developments have revealed the relationship between users' motivation and fitness apps. Chiu et al. used the expectation-confirmation model (ECM) and the investment model (IM) to investigate consumers' continuously using intention with a health management app [5]. Barkley et al. investigated these relationships by assessing exercise identity's capacity to mediate a theorized positive correlation between fitness app use and physical exercise behavior [6]. Wang and Fu investigated interaction behavior patterns and the emotional constructability of community members using a network ethnographic study of the Chinese fitness app Keep Society [7].

## 1.2 Research Gap

Most existing research on fitness apps has focused on the motivation of users, but with the high-speed growth of the online fitness sector in recent years, the competition between brands has shifted from incremental customers to existing customers. In the age of social media, fitness apps cater to both the fitness and social needs of users, especially in the context of people's increasing attention to their own health management and the pursuit of more efficient fitness methods. The motivation of users to use fitness apps could be influenced by many aspects; different marketing strategies of brands usually have more influence on users' motivation. Some fitness apps, for example, include social network functions that allow users to communicate with other users by posting comments or having the ability to share fitness tips. The fitness apps also invite top fitness coaches to teach fitness courses and key opinion leaders to promote products and services. However, how marketing strategy affects user motivation has rarely been studied directly. Fitness apps attract not only a large number of dedicated fitness enthusiasts but also a sizable number of female and student users. This paper is going to analyze the fitness app's marketing strategy and determine whether a unified marketing strategy is effective for users with different characteristics. There was a primary research question: Does the fitness app's marketing strategy affect users' continuous behavior?

## 1.3 Fill The Gap

This study selects Keep, the largest fitness app in China in terms of user size, as the research object. First, this paper designed a questionnaire survey for Keep app users to examine the impact of user motivation, applied the elaboration likelihood model (ELM) in accordance with the theory of persuasion, and proposed a research hypothesis. Next, the research assumptions were tested, and the data from the findings were analyzed based on the survey results. Finally, practical and theoretical implications are discussed. through exploring fitness apps' marketing strategies for diverse customer segments in the health management sector. On the one hand, it helps to deeply understand users' motivation for using fitness apps, and on the other hand, it facilitates the development of different corporate marketing strategies according to different stages of users' usage behavior so that different users can exercise using fitness apps, meeting their fitness needs, and achieving their health goals.

## 2. Literature Review

### 2.1 Definition & Development

According to the ELM, which was proposed in 1986 by American psychologists Petty and Cacioppo, when individuals are introduced to new knowledge, their perceptions are primarily affected by two paths: the central and the peripheral paths [8]. Individuals process new information using conflicting feelings, abilities, and motivations. People's central nervous systems are affected when they exert mental effort to learn new information. Having considered, judged, and assessed the material of this new knowledge or information, they form an acquaintance or an attitude [9]. The main factors influencing the treatment of the central channel are the quality of the information, the quality of the product, and the perception of cross-border adjustment. On the other hand, when people are unwilling to pay consideration to the content of new information they receive or the decision is less important to them, they are more easily persuaded by the peripheral paths.

## 2.2 Important Results

In recent years, there has been an increasing amount of literature on the behavior of fitness app users. Most of the research on fitness apps pays particular attention to factors that affect users' behavior toward fitness apps. The factors affecting the usage of fitness apps mainly include two aspects: the central path and the peripheral path.

For the central path aspect, many researchers have applied the integrated technology adoption model (ITAP), the expectation–confirmation model (ECM), and the investment model (IM), and they disclosed users' intentions to keep using the app based on their perceptions of helpfulness and satisfaction. The perceived usefulness of the app boosts user satisfaction [5]. User satisfaction and the magnitude of the investments had a significant positive impact on their engagement, which influenced their willingness to keep using the app in the future. Lim and Noh investigated the effect of a message trying to frame intentions to use a fitness app and discovered that the gain-framed text had a positive effect on exercise self-efficacy [10].

Several scholars used the use and gratification theory method for the peripheral path aspect, and network ethnography demonstrated that social interactions affect the continued intention to use fitness apps. Wang, based on use and gratification theory (U&G), found that the motivation variables for using fitness apps include four basic dimensions: sports function, social interaction, self-realization, and recreation [11]. Social interaction is the main motivation for heavy users of fitness apps, and professional identity, social interaction, and exercise habits are important independent variables affecting the frequency of using fitness apps.

Meanwhile, some scholars' research found that central and peripheral paths will affect the usage behaviors of fitness app users. For example, Cai et al. explained the factors that influence continued behavior in the use of fitness applications. Achievement motivation was the most influential factor in fitness app use [12]. Key drivers of ongoing behavior were also identified as confirmation of expectations, satisfaction, perceived ease of use, perceived utility, and trust. Sun et al., basing the foundation on the dual-factor theory and using a structural equation model, found that users' perceived benefits affecting stimulation factors include acquiring fitness knowledge, economic convenience, and social communication. Stimulation factors can increase users' perceived benefits and generate a positive effect on fitness app usage intentions [13]. Healthcare factors can appropriately alleviate users' perceived risks. Stimulation factors' influence on usage intention is greater than healthcare factors' influence. Cui and Chen's study results show that perceived usefulness, community influence, and trust positively and significantly affect users' willingness to continuously use fitness apps [14].

## 2.3 Summary

Given all that has been mentioned so far, one may suppose that perceived usefulness and outcome expectations as central paths have a positive impact on utilization intentions regarding a fitness app, and social interaction or subjective norms as peripheral paths make people generate positive attitudes toward fitness apps. However, no one pays much attention to the impact of brand marketing strategies on fitness app users' behaviors. This paper will explore the factors influencing the behavior of fitness app users in China based on brand marketing strategies.

## 3. Method

### 3.1 Research Design

The qualitative analysis in this study was performed to acquire insight into the relationship between digital marketing techniques and user behavior. The use of qualitative case studies is a well-established method for determining factors that influence user intent. Barkley J. E. and colleagues discovered in 2020, through quantitative research, that the connection between physical activity behavior and the use of fitness applications is mediated by exercise identity [6]. Using quantitative

analysis, samples were analyzed for elements that influenced Chinese fitness app users' behavior, as Cai Jie and colleagues revealed in 2021 [12]. To accomplish this, questionnaires were developed and distributed. As indicated in Figure 1, the following assumptions were made before data collection in this inquiry based on previous studies' hypotheses:

- H1. Perceived usefulness has a positive effect on the continuance intention of using fitness apps.
- H2. Outcome expectation has a positive effect on the continuance intention of using fitness apps.
- H3. Subjective norm has a positive effect on the continuance intention of using fitness apps.
- H4. Social interaction has a positive effect on the continuance intention of using fitness apps.

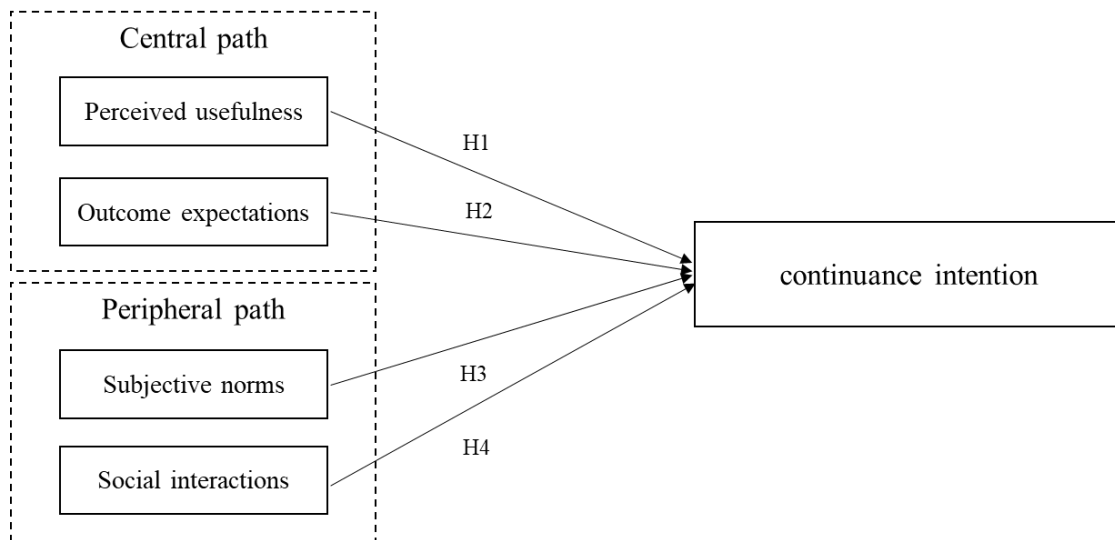


Fig 1. Research model

### 3.2 Data Collection

The questionnaire includes two parts: basic information and scale. The gender and age of the respondents were collected, and the influence of central path factors and edge path factors on their willingness to use Keep APP was measured. Questionnaires are distributed through WeChat, Weibo, QQ, and other social media platforms, and 350 copies are expected to be collected. The survey subjects are mainly young people, which are the target users of the Keep APP.

### 3.3 Data Analysis

This paper used SPSS and Excel for the regression analysis of the original data. Finally, 341 samples were collected, among which 300 samples had used Keep APP, therefore 300 samples are valid. The sample consisted of 155 males (51.7%) and 145 females (48.3%). The most important age group was the 20-40 age group (49.3%). Table 1 illustrates the demographic information of the survey respondents.

Table 1. Respondents' demographics (N=300)

Characteristics	N	Percentage %
Gender		
Male	155	51.7
Female	145	48.3
Age		
Under 20	48	16
20-40	148	49.3
40-60	74	24.7
Over 60	30	10

#### 4. Results

Table 2 provided the results of the reliability and validity test on the collected data. The results have confirmed the reliability of the constructions and also their convergent and discriminating validity. The Cronbach alpha coefficients of all constructions were higher than 0.70 (ranging from 0.876 to 0.931), indicating that all constructions are internally consistent. The composite reliability of the constructions (between 0.874 and 0.908) confirmed their conceptual validity. The average variance extracted from the model was used to assess convergent validity (ranging from 0.602 to 0.699), beyond the minimum standards of 0.50, as a consequence, the convergent validity of all measures is demonstrated. All factor loadings were meaningful ( $p < 0.001$ ), ranging from 0.733 to 0.862.

**Table 2.** Analysis of the measurement variables' reliability and validity

Constructs	Items	Factor loadings	AVE	CR	Cronbach's alpha
Perceived usefulness	PU1	0.855	0.602	0.901	0.908
	PU2	0.763			
	PU3	0.733			
	PU4	0.754			
	PU5	0.782			
	PU6	0.763			
Outcome expectations	OE1	0.855	0.647	0.902	0.905
	OE2	0.811			
	OE3	0.786			
	OE4	0.811			
	OE5	0.757			
Subjective norms	SN1	0.859	0.645	0.901	0.914
	SN2	0.802			
	SN3	0.765			
	SN4	0.806			
	SN5	0.779			
Social interactions	SI1	0.862	0.663	0.908	0.931
	SI2	0.795			
	SI3	0.809			
	SI4	0.805			
	SI5	0.798			
Continuance intention	CI1	0.816	0.699	0.874	0.876
	CI2	0.858			
	CI3	0.833			

Note: PU: Perceived usefulness; OE: Outcome expectations; SN: Subjective norms; SI: Social interactions; CI: Continuance intention

Table 3 presents the findings of the discriminating validity checks for every measurement variable. The square root of the AVE value of each variable (ranging from 0.776 to 0.836) was greater than the value of the correlation coefficient between these variables and the other variables (ranging from 0.341 to 0.516). This result supported the discriminant validity of the variables used in this study.

**Table 3.** Test of discriminant validity

Constructs	Mean	SD	1	2	3	4	5
1. Perceived usefulness	3.328	0.991	<b>0.776</b>				
2. Outcome expectations	3.757	1.002	0.435	<b>0.805</b>			
3. Subjective norms	3.159	1.010	0.468	0.390	<b>0.803</b>		
4. Social interactions	3.361	1.072	0.459	0.432	0.516	<b>0.814</b>	
5. Continuance intention	3.618	1.091	0.382	0.376	0.341	0.449	<b>0.836</b>

The Common Method (CMV) variance bias was resolved using the Harman single-factor test [15]. According to Herman's findings, there was just one component accounting for 41.04% of the total variation, which is below the threshold value (50%). The test result indicated that common method bias was not an issue in this study.

Table 4 showed the result of the analysis of variance. Through F-test, the p-value of the significance is 0.000 less than 0.05, which indicates that the hypothesis of this paper is valid and the regression equation is meaningful.

**Table 4.** Analysis of Variance <sup>a</sup>

	df	Sum of Squares	Mean of Square	F	Significance F
Regression	4	94.658	23.664	26.717	0.000 <sup>b</sup>
Residual	295	261.292	0.886		
Total	299	355.950			

a. dependent variable: continuance intention.

b. independent variable: perceived usefulness, outcome expectation, subjective norms, social interactions.

As indicated in Table 5, the perceived usefulness had positive and significant effects on the intention to maintain the use of fitness applications ( $\beta=0.155$ ,  $p<0.05$ ), supporting H1. Additionally, it had been found that there were statistically significant relationships between outcome expectations and the intention to continue using fitness apps ( $\beta=0.167$ ,  $p<0.01$ ), supporting H2. However, subjective norms were not statistically significant in predicting continued intent to use fitness applications ( $\beta=0.063$ ,  $p=0.306$ ), and as a result, H3 was not supported. Finally, it supported H4 by demonstrating that the paths from social interactions to the continuous intention of using fitness apps were statistically significant; social interactions had positive and significant effects on the continuous intention of using fitness apps ( $\beta=0.273$ ,  $p<0.001$ ). The R square of the model is 0.266, which demonstrates that the independent variable's capacity to explain the dependent variable is weak. The reason is that the questionnaire's design makes it difficult to distinguish between the four factors mentioned above, particularly subjective norms and social interactions. Additionally, because questionnaires are collected from multiple platforms, there is the possibility of distortion in the answers of respondents.

**Table 5.** Analysis of regression

Constructs	Standardized coefficient (β)	p-value	Standard error	Hypothesis
Perceived usefulness	0.155	0.011	0.067	H1 supported
Outcome expectations	0.167	0.005	0.064	H2 supported
Subjective norms	0.063	0.306	0.067	H3 not supported
Social interactions	0.273	0.000	0.064	H4 supported
Multiple R=0.516		R <sup>2</sup> =0.266	Adjusted R <sup>2</sup> =0.256	

## 5. Discussion

This paper investigates the influence mechanism of various factors in Keep’s digital marketing strategies on users' intentions to continue using them under four dimensions, based on the main dimensions of perceived usefulness, outcome expectations, subjective norms, and social interaction. Based on the findings of the structural modeling equation, perceived usefulness, outcome expectations, and social interaction all have an impact on users' continuous use intentions. Among them, perceived usefulness has a significant positive impact on users' continuously using intention, as does outcome expectation, and social interaction has the same effect on users' continuously using behavior. Keep's primary marketing content as a health management product is to allow users to feel the product's use effect and believe in the fitness effect after use. Keep has invited many well-known key opinion leaders in the fitness industry to join and has created a series of courses. Meanwhile, it has shot and produced Internet advertisements with slogans like "self-discipline gives me freedom," implying that using this product will result in significant changes in users' health management. Another example is the social media discussion topics started by Keep. Many netizens will participate in the discussion by sharing their body changes before and after using keep. These positive suggestions help users perceive the usefulness of the product and maintain a positive image of the effect of its use. This provides users with an incentive to continue using the software. Simultaneously, because fitness requires strong self-control and subjective initiative, mutual encouragement and sharing in the interest group will provide users with fitness motivation. Therefore, digital marketing targeting perceived usefulness, outcome expectation, and social interaction has a substantial positive impact on users' usage intentions. Subjective norms, on the other hand, do not affect users' willingness to continue using. People will not take the fitness advice of others around us seriously because people are familiar with them, so they will attribute their fitness effect with strong subjectivity and will not treat the use of the Keep App as the main reason for their fitness effect. At the same time, people are not very familiar with the social media topics that people around them participate in, so they are less influenced by the people around them.

Marketing has entered the digital age. The success of the digital marketing strategy is important for health management products. The findings of this study indicate that health management products should develop their own digital marketing strategies to improve users' perceived usefulness and outcome expectations, such as showing the changes before and after using the product for fitness in the advertisement, depicting the body state after fitness, and inviting KOLs to create fitness courses with high participation and ease of adherence. Instantaneously, the health management product is supposed to focus on the operation of the product's own community and plan topic discussion in social media, so that users feel they are not alone when using this product for fitness and enjoy the fun of fitness in competition and the encouragement of people with similar interests.

According to the findings of this paper, the influence of central paths on user behavior, such as perceived usefulness and outcome expectations, is consistent with previous research. The effect of social interaction on user behavior in the peripheral path is the same as in previous studies, but the

effect of subjective norms is different. According to the reasons stated above, this paper focuses on the influence of digital media marketing strategies on user behavior from various dimensions, implying that users are primarily influenced by information directly available on the Internet, whereas subjective norms primarily refer to the influence of influential individuals surrounding users. As a result, people around users rarely influence them through the Internet. At the same time, since this is the field of health management, the influence of people around users is less objective than that of strangers on the Internet, which ultimately leads to the difference in research results.

## 6. Conclusion

This study investigates the most common of Keep's digital marketing approach and explores how digital media may improve health management products in the context of the growing popularity of digital media and online health management products. This study investigates the two paths of the ELM model in order to sort out and expand the ELM theory and employ a regression model for user retention and continuous usage intents in digital marketing. The main conclusion of the discussion is that health management solutions should leverage digital marketing approaches to stimulate positive user experiences and use digital media to facilitate communication with relevant communities.

This research examines the relevant literature, applies the ELM model to Keep's a digital marketing strategy, and validates the model's application in the field of health management. There are a few other problems with this study. In order to focus on digital media, this analysis ignores the contribution of other traditional marketing methods to Keep and excludes Keep's offline marketing operations. Furthermore, due to study volume considerations, the research on digital media marketing approaches has chosen the most representative ones rather than analyzing all of them. In order to broaden more targeted user channels and contribute to the formation of a good national fitness culture, the next step in this research is to subdivide user groups of health management products and investigate the various impacts of digital marketing strategies on consumers with different characteristics. Despite the fact that this article verifies ELM theory's applicability in the domain of health management, its findings about the influence of subjective norms on consumers diverge from the basic premise. More research will be conducted in the future to determine why subjective norms do not apply to digital marketing tactics in the field of health management.

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