

Research on Modeling and Simulation of We-media Brand Equity Growth

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Abstract. With the development of Internet technology, behind the rapid prosperity of We-media is a large number of We-media flash in the pan. How to create brand assets to provide competitive advantages for the sustainable development of We-media has become an urgent problem for profitable We-media. This paper analyzes the growth mechanism of we-media brand equity from the perspective of user's mind, applies system dynamics method to carry out modeling and simulation analysis, and explores the general law of we-media brand equity growth. This paper finds that the external environment and similar We-media have no obvious impact on the growth of We-media brand equity, but brand communication will have a direct positive impact. The research results of this paper can provide ideological inspiration for the brand equity construction of We-media.

Keywords: We media, brand equity, system dynamics, modeling and simulation.

1. Introduction

With the progress of Internet technology, WeChat, Weibo, short video, live broadcast and other We-media have achieved rapid development. We-media has become a new trend in China's media field with its diversified forms, good interactivity and broad user base [1]. Although we media appeared for a short time, due to the relatively low threshold of entry, there has been a large number of us media in China. The prosperity and development of We-media also exposed many problems. On the one hand, many newly-built We-media cannot stand out from the mass of peers and are caught in the dilemma of no one's attention; On the other hand, the short-term popularity of We-media is often a flash in the pan and cannot be sustainable. The operation of we-media is like the operation of an enterprise. In the highly competitive market, we need to rely on strong brands to gain competitive advantage. How we media carry out brand equity construction has become an urgent problem to be solved. The existing relevant research mainly focuses on the concept, communication strategy, ethics and other aspects of we-media, while the research on we-media brand equity construction is relatively small. This paper conducts system dynamics modeling and simulation research on the growth mechanism of we-media brand equity based on the user's mind to explore a feasible path for the construction of we-media brand equity.

2. Systematic analysis of the growth of We-media brand equity

2.1 System structure and factor analysis of self-media brand equity growth

The growth process of we-media brand equity is a dynamic system, including internal and external factors. This paper takes the main factors as the analysis object, and finds that the internal factors of the self-media asset growth system include operation management, brand communication, brand equity, etc., and each factor is an independent subsystem. External factors include user's mind, similar We-media and external environment. The external environment includes the political, economic, cultural and technological aspects of the environment where we media are located. Due to the important direct impact of the same kind of We-media, this paper regards the independence of the same kind of We-media from the external environment as a major factor.

Profitable We-media mainly carries out operation and management in a team way, and carries out brand communication to specific user groups. The user groups screen and process the information transmitted by We-media under the influence of their own minds. When the user groups gradually receive, recognize and identify with the We-media brand, the user groups will have an emotional preference for the We-media brand. At this time, the brand equity of We-media is formed in the user's mind. In this process, similar self-media experience will affect the acceptance of the user group to the self-media brand, and then affect the formation effect of the self-media brand equity. On the one hand, the external environment will affect the talent and technology acquisition of the we-media operation team, on the other hand, it will have a direct institutional constraint on the operation and management of we-media, and thus affect the management effect of we-media. These are the formation mechanism and interaction relationship of the growth process of We-media brand equity, as shown in Figure 1.

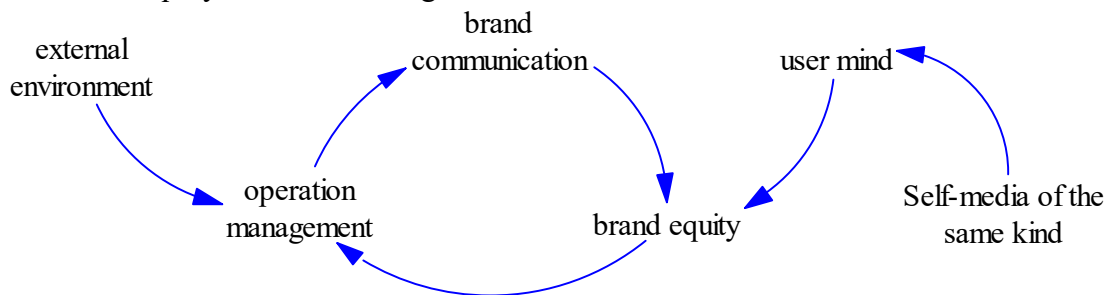


Figure 1 We-media brand equity growth system

2.2 Self-media brand equity growth subsystem analysis

In order to better analyze the interaction between various factors in the growth process of our media brand equity, this paper further analyzes the subsystems of our media brand equity growth system.

(1) Operation management subsystem

Operation management is an important subsystem to support the growth of we-media brand assets. According to the existing research results and the characteristics of we-media operation and management, this paper finds that we-media operation and management are mainly affected by such factors as financial management, staff quality, management system, brand positioning, creative management and technical level. Financial management reflects the profitability of We-media operation and management. The staff quality reflects the staff quality and professional ability of the operation team. The management system reflects the efficiency and effect of operation management. Because this article explores the growth law of We-media brand equity, the brand positioning that reflects the level of brand planning is independently listed as the main factor. Creation management reflects the management level of the operation team in content creation. For we-media, content creation is the basis of survival, and the level of creation management is crucial. The technical level reflects the technical level of the operation team in new media and information technology. With the rapid development of Internet technology, we media is particularly important for the operation team to master relevant new technologies.

(2) Brand communication subsystem

The brand communication system is an important activity for the formation of We-media brand assets in the minds of users, and is affected by the operation and management level of We-media. According to Maletsk's communication theory, the brand communication system of We-Media is mainly composed of communicators, media, information and publicity. The quality and personality characteristics of communicators will have a direct impact on users when we media transmits brands to users through live broadcast or short video. With the development of Internet technology, the emergence of various media platforms makes user groups more dispersed. We media need to integrate different media platforms and carry out information dissemination in a diversified way. Information is an important factor for We-media to gain users' attention. We media continue to

provide high-quality information is an important guarantee of brand equity. In order to stand out from the vast number of peers, in addition to high-quality information, we media also need to carry out effective promotional activities to make users pay attention to our media brands.

(3) User mind subsystem

Users will process the brand information transmitted by We-media for a second time, and this process is affected by users' original knowledge structure, emotional characteristics and values. Knowledge structure will affect users' understanding and acceptance of We-media brands. Emotional characteristics will affect the emotional resonance between users and We-media brands, while values will affect the recognition of users to We-media brands. Users' reading habits will directly affect We-media's choice of media platform. Therefore, from the perspective of self-media brand equity growth, the user's mental system is composed of knowledge structure, emotional characteristics, values and reading habits.

(4) Brand equity subsystem

Aaker (1991) proposed the famous five-star model of brand equity. Based on this model and combined with the characteristics of we-media, this paper believes that we-media brand assets mainly consist of familiarity, perceived quality, identity and loyalty [11]. Familiarity reflects the ability of users to identify or recall We-media brands and is the basis of brand equity. Perceived quality reflects users' judgment on the quality of We-media messages. The degree of recognition reflects the user's acceptance of We-media brand values. Loyalty is the core of we-media brand assets, reflecting users' preference for we-media brands. According to the analysis of the above subsystems, the components of the self-media brand equity growth system are shown in Table 1. In order to simplify the systematic analysis of we-media brand equity growth, and also to grasp the main influencing factors, this paper will not make further in-depth analysis of the external environment and similar we-media, but as an independent influencing factor.

Table 1 Components of We-media brand equity growth system

Serial number	First-level factors	Second-level factors
1	Operation management	Staff quality, management system, financial management, technical level, creative management, brand positioning
2	Brand communication	Disseminators, Media, Message, propaganda
3	User mind	Reading habits, values, knowledge structure and emotional characteristics
4	Brand equity	Familiarity, perceived quality, life integration, loyalty
5	External environment	
6	Self-media of the same kind	

3. Modeling and simulation of self-media brand equity growth

3.1 Cause and effect diagram of self-media brand equity growth

Based on the above analysis, this paper links and summarizes the interaction between the components of the subsystems of the growth of We-media brand equity, and constructs a causal relationship diagram of the growth of We-media brand equity, as shown in Figure 2. This chart can intuitively reflect the causal relationship between the factors of the first-level and second-level hierarchy of the growth of We-media brand equity.

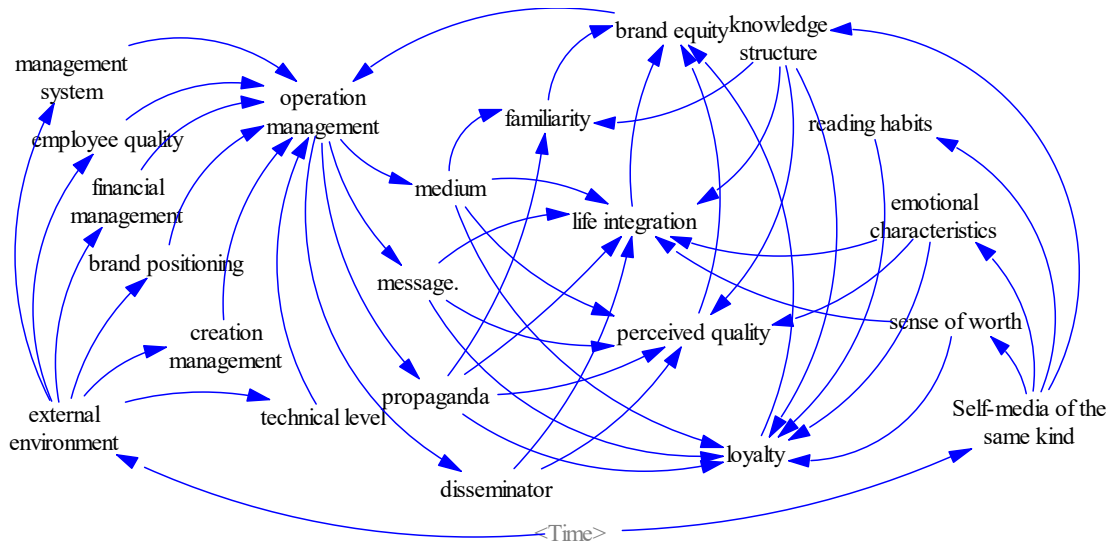


Figure 2 Cause and effect diagram of self-media brand equity growth

3.2 Construction of the system dynamics model of We-media brand equity growth

3.2.1 Self-media brand equity growth system dynamics flow chart

According to the causal relationship between various factors of the growth of our media brand equity, this paper uses Vensim PLE software to build a flow chart of our media brand equity growth, as shown in Figure 3.

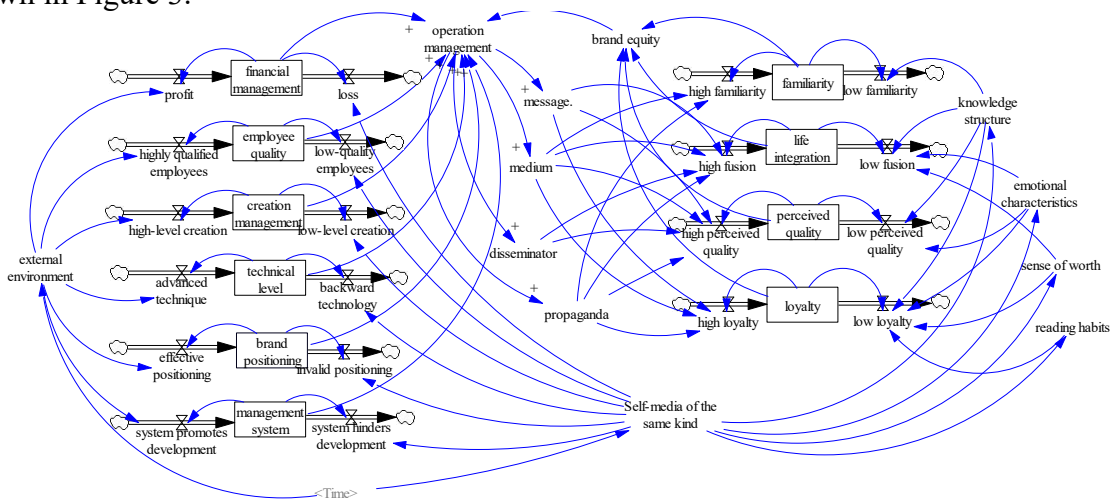


Figure 3 Flow chart of self-media brand asset growth

3.2.2 Main equations and parameters of self-media brand equity growth

In order to ensure the accuracy of the system analysis and simulation of the built model, this paper carries out autoregressive analysis on the relevant variables. The parameters of each variable are determined through autoregressive analysis. In view of the limited space, the analysis process will not be discussed here. The following are the main operational equations and parameters for the growth of self-media brand equity.

- (01) Initial time=0
- (02) End time=150
- (03) Time step=1
- (04) Time unit: month
- (05) External environment=WITHLOOKUP (Time, [(0,0) - (150,1)], (0,0.7), (30,0.8), (150,0.8))

3.2.3 System dynamics model verification

In this paper, the above equations and parameters are calculated with Vensim PLE software to obtain the simulation results of We-media brand equity growth, as shown in Figure 4. From the simulation results, we can see that the self-media brand assets show a gradual growth trend in the positive growth of operation management and brand communication. Due to the influence of users' minds, similar We-media and external environment, brand assets will not grow indefinitely, but will remain stable after growing to a certain extent. The simulation results are in line with the change law of the actual We-media brand equity.

In order to further verify the consistency between the calculation results of the model and the actual growth of We-media brand equity, this paper investigated 10 well-known We-media enterprises in Guangzhou and obtained historical data of key factors (2016-2022). By comparing the simulated data of the model with the actual values of 10 enterprises, the relative error between the two is calculated to be 5%. Therefore, the self-media brand equity growth model built in this paper meets the consistency requirements.

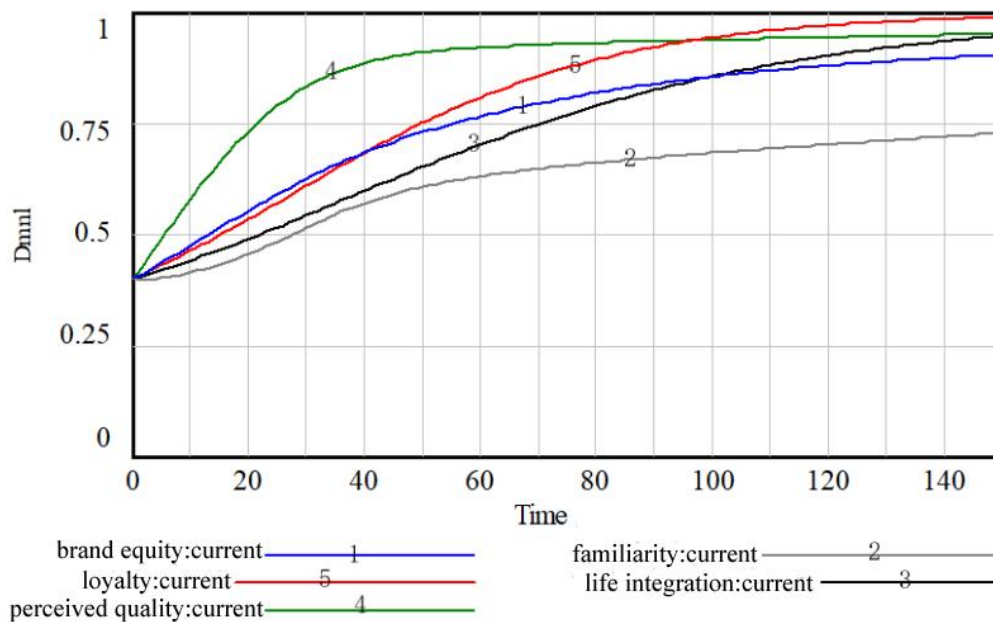


Figure 4 Simulation results of We-media brand equity growth

4. Simulation analysis of We-media brand equity growth

Brand communication is a direct influence factor of the formation of brand equity in users' minds by We-media. Therefore, this paper conducts simulation by reducing the parameters of the variables related to brand communication to observe the change of We-media brand equity when the effect of brand communication decreases. The parameters of each variable of brand communication are adjusted as shown in Table 2. In this paper, Vensim PLE software is used to simulate and calculate the results as shown in Figure 5. According to the simulation results, when the effect of brand communication decreases, we media brand equity shows a significant downward trend. It is concluded that there is a positive relationship between brand communication and self-media brand equity, and it is also an important influencing factor of brand equity.

Table 2 Parameter adjustment of various variables of brand communication

Independent variable	Dependent variable	Original parameters	Adjustment value
message	high fusion	0.08	0.0001
	high perceived quality	0.003	0.001
	high loyalty	0.08	0.0001
medium	high familiarity	0.1	0.001
	high fusion	0.0001	0.00001
	high perceived quality	0.0001	0.000001
	high loyalty	0.04	0.001
disseminator	high fusion	0.04	0.001
	high perceived quality	0.0003	0.0001
propaganda	high familiarity	0.2	0.01
	high fusion	0.001	0.0001
	high perceived quality	0.6	0.01
	high loyalty	0.003	0.0001

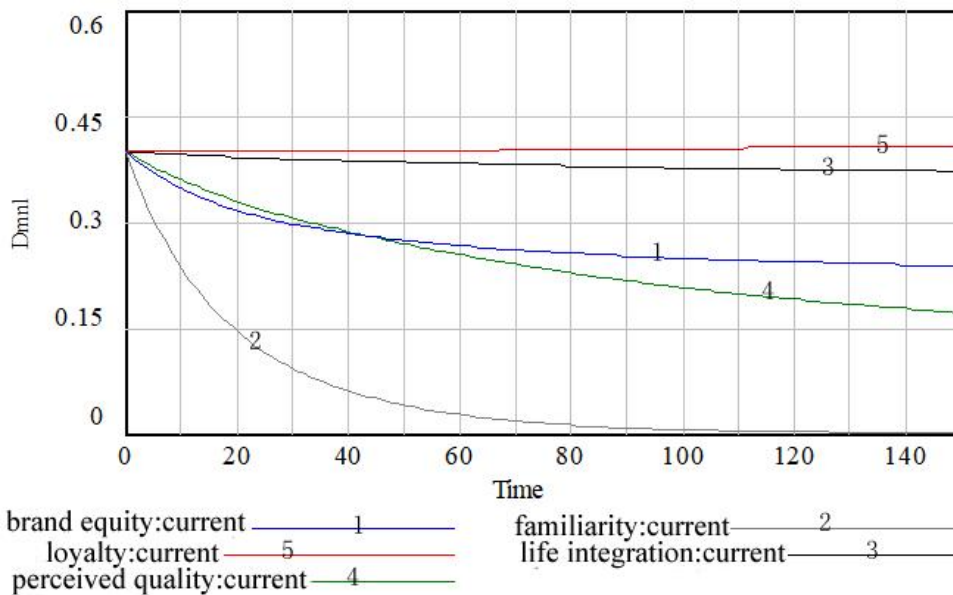


Figure 5 Impact analysis of brand communication

5. Research conclusion and summary

5.1 Research conclusion

Based on the above simulation analysis, this paper draws the following conclusions.

(1) Brand communication has a direct positive impact on our media brand equity. When the effect of brand communication decreases, we media brand assets will decrease. Therefore, we media should strengthen the investment and management in communicators, media, information and publicity to improve the effect of brand communication.

(2) The impact of external environment on We-media brand equity is not obvious. Although the external environment has a negative impact, while the internal factors of We-media remain unchanged, the brand equity still shows a growth trend, but the growth rate slows down. Therefore, strengthening the internal management of we-media can resist the adverse impact of the external environment.

(3) Similar we-media has a negative impact on we-media brand equity, but it is not obvious. No matter whether the competitive pressure brought by the same kind of We-media is reduced or increased, the overall brand equity is still showing a growth trend. It's just that the growth rate of our media brand assets accelerates when the competitive pressure decreases, while the growth rate of our media brand assets slows down when the competitive pressure increases. Therefore, we-media can resist the competitive pressure brought by the same kind of we-media by strengthening its own management.

(4) We media brand assets will not grow indefinitely. Because brand equity is built in the user's mind, We-media brand equity will not grow indefinitely under the influence of the user's mind, but will remain stable after growing to a certain extent.

5.2 Research summary

This paper studies the growth mechanism of we-media brand equity from the perspective of user's mind, and applies the system dynamics method to build a model for simulation analysis. This paper expands the research content of we-media and the application scope of system dynamics, and the constructed model provides a new analytical tool for we-media brand equity research. Because some secondary factors are ignored in the construction of this model, the model cannot reflect all the factors that affect the growth of our media brand equity. In the future, we will adjust the influencing factors according to different research purposes and explore the impact of other factors on the growth of our media brand equity.

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