



From Symbolic Oppression to Behavioral Domestication: User Stickiness Generation Path of Personalized Feedback Mechanism for IP Image of Duolingo

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Abstract. With the arrival of the era of Internet plus, Big Data and the intensification of market competition, brands are now trying to adopt IP marketing strategy to enhance market competitiveness. Based on this context, the use of brand IP to enhance user stickiness has become an important part. Some prior studies conclude that brand IP has an impact on user stickiness in mass services, however, there is still a gap in research on personalized services. Therefore, the present study explored a path to generate user stickiness driven by the personalized feedback mechanism of branded IPs, through the process tracking method in the case study and taking Duo, an IP image of Duolingo, as an example. In conclusion, the present study found that brand IP has a significant effect on user stickiness and loyalty through personalized feedback and emotional interaction with users, which can eventually lead to the formation of behavioral habits.

Keywords: Symbolic Oppression, Behavioral Domestication, User Stickiness, Duolingo

1 Introduction

In the era of Internet plus Big Data, with the situation of information overload and scarce attention, users are more in pursuit of personalized experiences and brand self-marketing is also facing various challenges. Therefore, brands began to adopt IP marketing to enhance their market competitiveness and created many distinctive IPs. Brand IPs also offer possibilities for improving user stickiness in multiple aspects. However, enterprises still have a long way to go in terms of how to shape IP images and enhance user stickiness by providing personalized services.

Based on this, this study will take the IP image Duo of the language learning software Duolingo as an example to deeply explore how the personalized feedback mechanism of the brand IP image affects the generation of user stickiness. Specifically, it will revolve around the following issues: What specific elements and links does the personalized feedback mechanism of IP image include? What specific manifestations does user stickiness include? How can personalized feedback from IP image motivate users and promote the formation of long-term user stickiness?

This study can contribute to the theoretical development of IP marketing, reveal the influence mechanism of the personalized feedback mechanism on user stickiness, and provide a new perspective for the academic research of brand marketing. At the practical level, this research can provide enterprises with precise personalized service strategy suggestions, helping to enhance user stickiness, strengthen brand competitiveness, and promote the sustainable development of enterprises.

2 Literature Review

In the field of brand marketing, brand IP leaves a deep impression in the minds of consumers through unique content and image, profoundly influencing their purchasing behavior and loyalty. The existing studies have explored the impact of brand IP on user stickiness in terms of emotional connection, social interaction, and content operation from multiple perspectives.

Emotional connection is the key to establishing a deep relationship between brand IP and users. For instance, Zhao, X. B. believed that the interactive marketing of cultural products is an interactive ritual of spiritual symbols, which can meet consumers' emotional needs [1]. Xiang, Y. et al. emphasized that the core values of a star IP are the primary criterion for its development and dissemination [2]. Only when they align with the core values commonly recognized by society can the Fan Effect be triggered [2]. Li, Y. J. analyzed that the essence of IP marketing is the fan economy, the key is to personalize the brand, using cultural identity to cause emotional resonance, and thus triggering the user's self-propagation and secondary creation, expanding the coverage of brand promotion and user attention, and its users have a high degree of loyalty [3]. These studies suggest that by conveying emotions and values, brand IPs are able to elicit emotional resonance and build emotional connections among users, thus increasing their loyalty and stickiness.

Social interaction is an effective way to increase user stickiness. Duan, C. L. et al. pointed out that under the background of Big Data +, the IP content industry chain has changed from a traditional, single, linear industry chain to a co-creative and shared industry chain, and users have changed from passive receivers to active participants [4]. Users have moved from passively and unconsciously acquiring and receiving information content to actively acquiring, sharing and even producing content [4]. Moreover, Xiang, Y. et al. believed that the diverse interpretations of star IPs can expand the audience by continuously establishing emotional connections, and convert more audiences into fans [2]. Then, through IP incubation and development, they can become super fans, thereby extending the life cycle and monetization ability of the IP [2]. In addition, Xian, Y. Z. considered that IP images also play a significant role [5]. In marketing activities, IP images can attract consumers to participate in online interactive games and offline experience activities, narrowing the distance between consumers and the brand [5]. In conclusion, it is evident that brand IP through social interaction can not only enhance users' sense of participation but also expands brand influence and further increases user stickiness through sharing and dissemination among users.

High-quality IP content operation can effectively attract and retain users. For instance, Duan, C. L. et al. proposed that IP content operation has achieved innovative developments such as technology-driven, user-driven, netizen-driven and product-driven [4]. Besides, Xiang, Y. et al. pointed out that the stories of star IPs are content with certain creativity, rich in emotion and moving the audience, and they are able to maintain the continuity of the stories under the transformation of different carriers (movies, TV series, games, etc.) [2]. Ma, L. X. L., moreover, demonstrated the role of content empowerment in driving book sales with the successful case of *Journey to the West* books leveraging on the game *Black Myth: Wukong* to realize new media marketing [6]. These studies show that brand IPs can meet users' different needs by continuously outputting high-quality and diverse content, increase users' attention and interest in the brand, and thereby enhance user stickiness.

In conclusion, brand IP has a certain impact on user stickiness in terms of emotional connection, social interaction and content operation. However, most of the existing studies focus on the mass services of brand IPs, lacking research on personalized services. These relevant studies only focus on brand IP providing uniform and featureless feedback information, but lack personalized feedback based on user behavior information. Therefore, in future research, it is possible to deeply explore how brand IP generates personalized service mechanisms based on user behavior information in order to enhance user stickiness, with combination of the three aspects above.

3 Case Description: Duolingo's Personalized Feedback Mechanism via IP Duo

3.1 Duo's Anthropomorphic Character Design

Duo, the IP image of Duolingo is a green owl. It has bright colors and its image elements include a pair of big eyes, a round body and soft wings, presenting characteristics of being approachable, interesting and easy to recognize. Consider the overall material tendency of IP, it can express personality, such as soft texture will tend to bring a friendly feeling. The material should be tender and soft, so that people can feel the affinity and vitality of the brand [7].

Duo's anthropomorphic concept is presented through the means of exaggerated expressions and actions, as well as vivid and witty language. It usually conveys information through expressions such as smile, fear, eyes blazing with anger. Meanwhile, Duo interacts with users by using humorous and satirical language, for instance, "I've already started thinking about you!" "S attribute explosion (Study)" "Are you not going to learn at all?" These learning reminders, which are visually striking and slightly pressing, have successfully personified the brand IP and effectively aroused users' emotional resonance and learning engagement.

3.2 Feedback Path Mechanism in Duolingo Platform

The platform feedback mechanism of Duolingo is reflected in the interaction process with users. When users complete their daily learning tasks, the platform will send out encouraging messages such as “Perfect!” and “You are so committed that your marriage is even longer-lasting than some celebrities!” Combined with interesting animations, it will enhance users' sense of achievement and pleasure. Conversely, when users fail to complete the learning engagements for a long time, the threat push will be triggered. For instance, the icon prompt message will display “Final Warning!” or “You're Doing Duo so boring”, with the Duo image will change to skull. The aim is to evoke users' sense of guilt and responsibility, and prompt them to resume their learning behaviors as soon as possible. Finally, when the user resumes learning, emotional encouragement will be provided to enhance the learning process. For instance, Duo shed tears and said: “This time's tears were shed because of you. You're back, and everything will be fine.” This will further deepen the user's sense of guilt. The platform also sets a button for entering the learning mode under the prompt message to guide the user to continue learning.

3.3 Hierarchical Classification of Emotional Feedback Behaviors

The Duolingo platform will adjust the prompt style and icon status based on users' learning frequency, login frequency, completion rate and other behavioral data. For instance, if a user fails to log in to the learning platform for two consecutive days, Duo will faint and if a user does not study and punch in for two consecutive months, Duo will enter a state of imminent death. On the other hand, for users with high stickiness, when they complete special milestones such as 365 days or 1000 days of continuous study clock-in, they will receive Easter egg-level feedback. For instance, they will see an animated expression like Duo transforms from an owl into a golden phoenix, which creates a sense of privilege. At the same time, it also prompts users with moderate stickiness to continuously engage in learning behaviors towards this goal.

4 Case Analysis: From Symbolic Reminders to Self-Behavior Domestication

4.1 IP's Shape on Consumers' Psychology

The feedback information from brand IP has a potential influence on consumers from the outside in. A youthful and concrete brand image is a direct form of expression that can arouse the interest and attention of the audience [8]. Duo's various fancy reminders -- humorous language, exaggerated expressions, these anthropomorphic emotional expression and strong visual impact, which conceal the power to stimulate the user's inner

emotions. With continuous emotional triggering, users begin to regard Duo's expectations as their own goals, and link their own learning behaviors with Duo's emotional expressions, causing emotional resonance and forming psychological identity. This kind of psychological identity prompts users to change from passive reminders to active participants. These symbolic reminders are no longer an external incentive mechanism, but rather becomes the user's own internal driving force.

When the learning behavior becomes a self-requirement, rather than a mere satisfaction of Duo's expectations, the internal driving force will bring its benefits into play. Users are motivated to use the product continuously and consciously, and eventually form a behavioral habit, which has a positive impact on user stickiness.

4.2 Interaction between Behavior Tracking and Emotional Customization

IP naturally possesses the attribute of emotional connection [9]. The Duolingo platform system realizes personalized feedback by tracking and reading user behavior information and outputting dynamic emotional expressions. For the behaviors of different users, Duo will provide different feedback. Compared with the traditional system response behavior, this targeting can make users feel accompanied and cared for, bringing a sense of belonging, thereby establishing an emotional connection with users and constantly motivating them to learn behaviors. Meanwhile, the differentiated experience brought by this personalized feedback, to a certain extent, gives users a sense of satisfaction in realizing their self-worth, and even a sense of privilege. Driven by this positive emotion, users will continuously carry out further learning behaviors.

Under this personalized interaction mechanism, Duo's dynamic feedback has transformed from passive reminders to emotional companionship binding, enhancing the emotional connection between the brand IP and users, promoting users to continuously and stably use the service, and improving user stickiness and brand loyalty.

4.3 The Manifestation Path of User Stickiness

Through the above methods, Duolingo has a practical driving effect on user stickiness, which is first reflected in the significant increase in daily active users, monthly active users and users' willingness to pay. Luis von Ahn, the co-founder and CEO of Duolingo, mentioned that in 2024, Duolingo's daily active users (DAUs) reached 40.5 million, representing a year-on-year growth of 51%; it had over 116.7 million monthly active users (MAUs), a year-on-year increase of 32% [10]. It added the largest number of net paying subscribers in its history, reaching 9.5 million paying subscribers by the end of December 2024, achieving the highest quarterly subscription revenue in its history [10].

In addition, the improved performance of user stickiness is also reflected in the social influence formed by the UGC self-propagation. Social media offers a platform for Integrated Marketing Communication because it is meant to augment the two-way communication method between the organization and its stakeholders by having the ability to facilitate discussions, provide feedback and suggestions, and build general comments

[11]. In a community, every user is a communication node, and its own social network is the best word-of-mouth marketing resource [12]. After using Duolingo, users develop a strong emotional connection over time and engage in a series of secondary creation activities on social media, such as posting Duolingo Emoji Collection on the REDnote platform. These actions not only meet users' emotional expression needs but also encourage them to continue using the platform through social recognition and group incentives. In addition, UGC content created by users on social media platforms is often characterized by strong authenticity and wide dissemination. Some high-quality content, through the continuous interaction between users, has increased in popularity and formed a viral spread, which not only attracts new users to join the platform, but also reflects the stickiness and participation of existing users.

5 Theoretical Refinement: The Third-Order Generative Model of IP Personalized Feedback-Driven User Stickiness - F-E-H Model (Feedback-Emotion - Habit)

Based on the case analysis of Duolingo's IP Duo, it can be observed that the brand interacts emotionally with users through personalized feedback, which helps them form behavioral habits, and effectively enhance user stickiness and loyalty. Therefore, based on these three stages, this study will refine the F-E-H model to further assist people in understanding the generation path of user stickiness driven by personalized Feedback of brand IP.

5.1 Feedback

Brands generate personalized feedback content based on user data such as study check-in frequency and behavioral logs, and adjust the intensity, style and frequency of the content. Meanwhile, the feedback is no longer a simple system reminder, but rather personalized symbolic interaction through IP images, precisely pushing to users, which is more targeted.

5.2 Emotion

Brands utilize personified IP images to provide personalized feedback, building multiple emotions such as a sense of humor, anxiety, companionship, and privilege, thereby engaging in emotional interaction and connection with users. During the interaction process, the brand guides users to project their self-awareness and values onto the IP image, and makes them expect the IP image to become an extension of their emotions, gradually forming psychological identification and enhancing their sense of belonging and dependence. Users not only regard brand IP as a tool, but also as their emotional companion.

5.3 Habit

Through the continuous emotional interaction between brand IP and users, users' sense of identity and dependence on the brand deepens. The dynamic feedback information of brand IP moves from external incentive to internal drive, and users begin to actively engage in platform participation behaviors, no longer needing strong external stimulation. This process of self-domestication gradually leads to the formation of stable behavioral habits, thus enhancing long-term user stickiness and brand loyalty.

6 Conclusion

In summary, this study analyzes the internal mechanism and user stickiness performance by observing the specific performance of IP personalized feedback mechanism of Duolingo, and finally refines the F-E-H third-order generation model of user stickiness. As a result, the public can better understand the user stickiness generation path of brand IP personalized feedback mechanism.

6.1 Research Contribution

This study, from the perspectives of behavioral psychology and communication, enriches the relationship construction between the feedback mechanism and user stickiness in IP marketing, providing a new theoretical basis for a better understanding of consumer psychology and behavior.

This study fills the lack of previous researches on the role path of personalized feedback mechanism and provides theoretical support for how brands can enhance user stickiness through personalized service strategies.

6.2 Practical Value

This research is of reference significance for the marketing strategies of brands. It is suggested that brands design a personality-based IP and a dynamic emotional feedback system -- brands should use personified IP images to provide dynamic feedback and establish emotional connections with users. This design transforms IP from a content symbol to a data interaction terminal, which can strengthen long-term user connection, enhance user stickiness, and promote the sustainable and healthy development of the brand.

6.3 Research Outlook

In the long run, this study could be carried out in the future for quantitative analysis of questionnaire or behavioral log data. For example, comparing the similarities and differences in the feedback effect of different IP types -- Cute IP vs Cool IP. The Cute IP is characterized by cuteness and healing, with rounded images and soft colors, which can evoke a sense of closeness and protection in users; The Cool IP is characterized by handsomeness and personality, with sharp image and strong color, which often brings users' sense of independence and power. Eventually, through a more detailed and deeper level of analysis, and then observe and summarize the general strategies and better solutions of brand IP in user stickiness enhancement.

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