

Psychological Ownership of Avatars in the Metaverse: Its Key Antecedents and Outcomes

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This study delves into the emerging field of consumer behavior in the metaverse, focusing on the concept of psychological ownership in relation to avatars. It examines how users' perceived ownership of their avatars influences their virtual product ownership and their intent to purchase real versions of these products. Central to this study is the identification of key factors that foster psychological ownership of avatars. Additionally, it investigates how the method of acquiring virtual currency impacts the development of psychological ownership, initially for the avatar and subsequently for virtual products associated with it. The research employs a survey of 276 participants, analyzed through PLS-SEM. Results reveal that control, intimate knowledge, and personal investment significantly enhance psychological ownership towards avatars, which subsequently extends to virtual products. Notably, the study finds that the method of obtaining virtual currency, especially through a reward system, moderates the transfer of psychological ownership from avatars to virtual products. This is in contrast to direct purchase of virtual currency. These insights are crucial for understanding consumer behavior in digital realms and offer valuable implications for metaverse platform developers and marketers, aiming to boost consumer engagement and sales in both virtual and physical domains.

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Metaverse

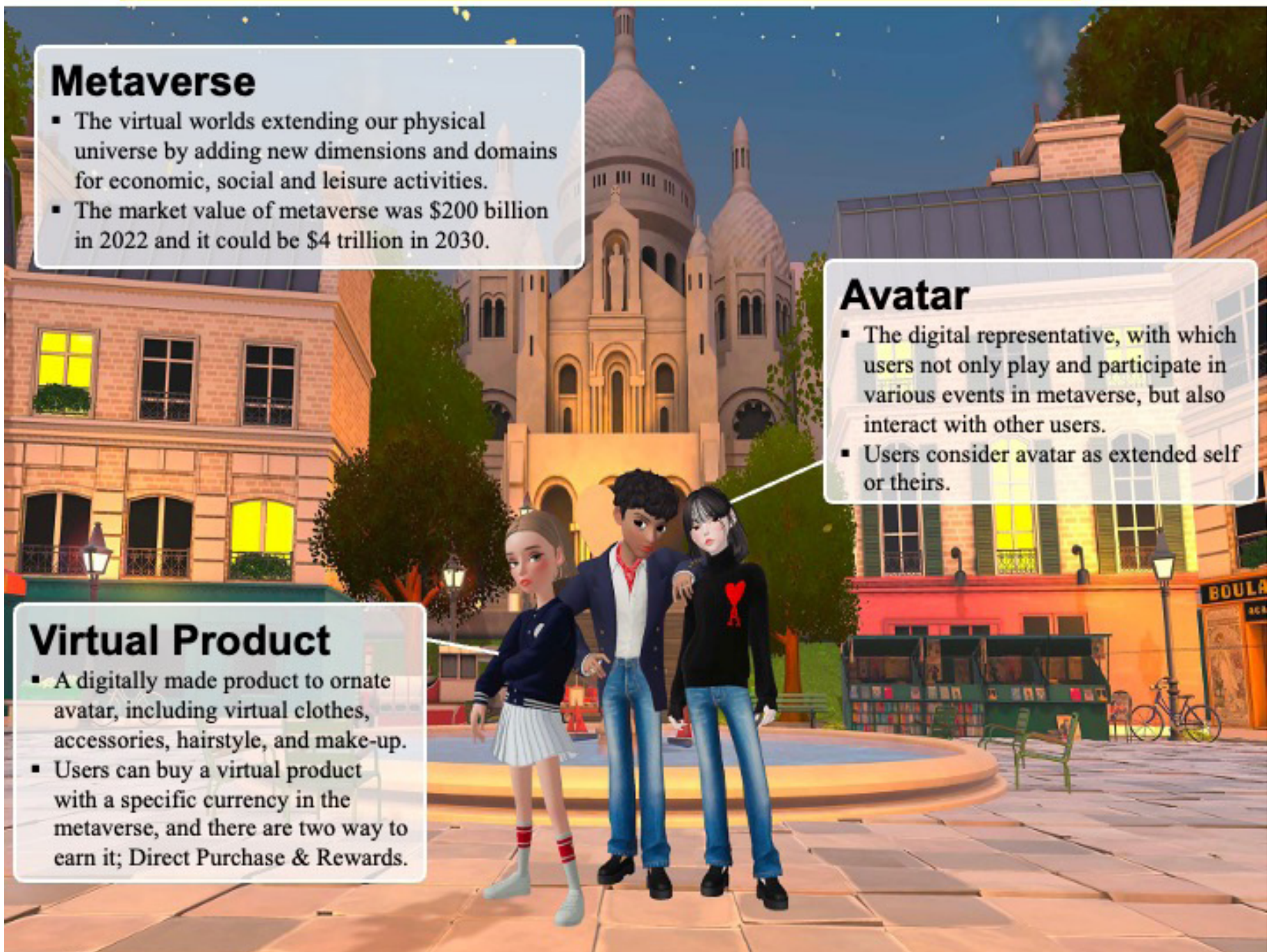
- The virtual worlds extending our physical universe by adding new dimensions and domains for economic, social and leisure activities.
- The market value of metaverse was \$200 billion in 2022 and it could be \$4 trillion in 2030.

Avatar

- The digital representative, with which users not only play and participate in various events in metaverse, but also interact with other users.
- Users consider avatar as extended self or theirs.

Virtual Product

- A digitally made product to ornate avatar, including virtual clothes, accessories, hairstyle, and make-up.
- Users can buy a virtual product with a specific currency in the metaverse, and there are two way to earn it; Direct Purchase & Rewards.



1. Introduction

□ Research gap

- Few studies identified the effect of psychological ownership toward avatar and the virtual product.
- Especially, the effect the acquisition method of the virtual currency on virtual product purchase intention has not been studied much.

□ Objective of the study

- 1) The three routes through which psychological ownership toward the avatar develops.
- 2) The extent to which psychological ownership extends from the proximal (i.e., the avatar) to distal targets (i.e., virtual items utilized by the avatar)
- 3) The moderating effect of virtual currency earning methods on this extension of psychological ownership.



Psychological Ownership

An emotional state where an individual perceives a specific object as their possession

- Three routes to enhance psychological ownership

Ability to Control

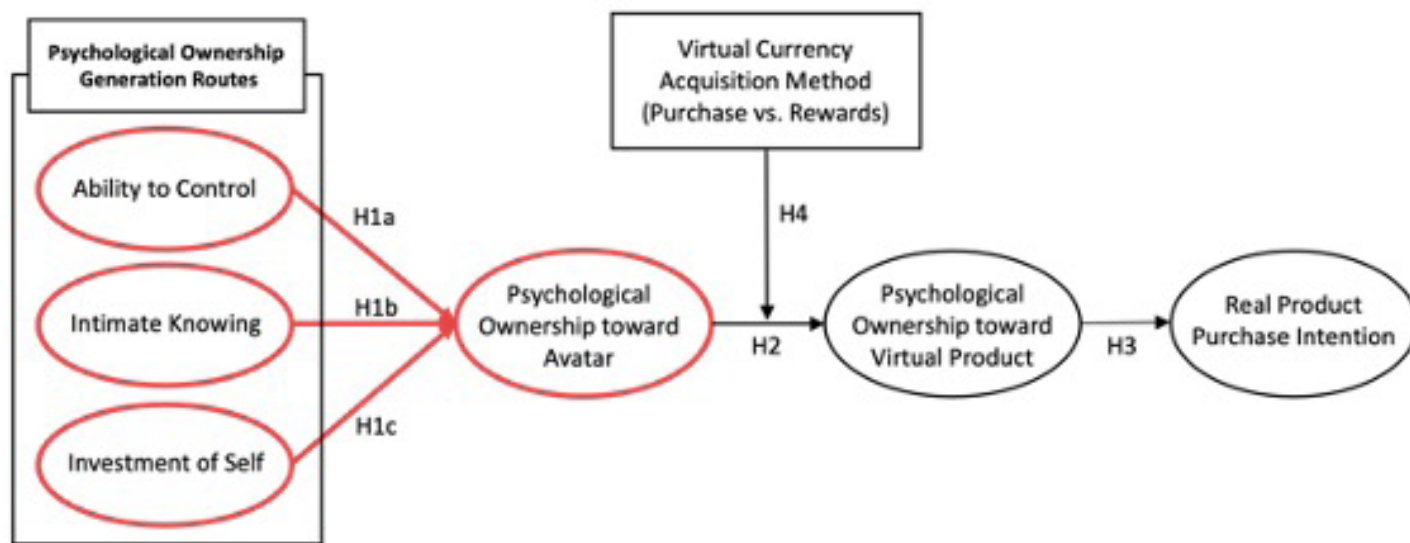
Intimate Knowledge

Investment of Self

- Can transfer from the proximal to the distal target

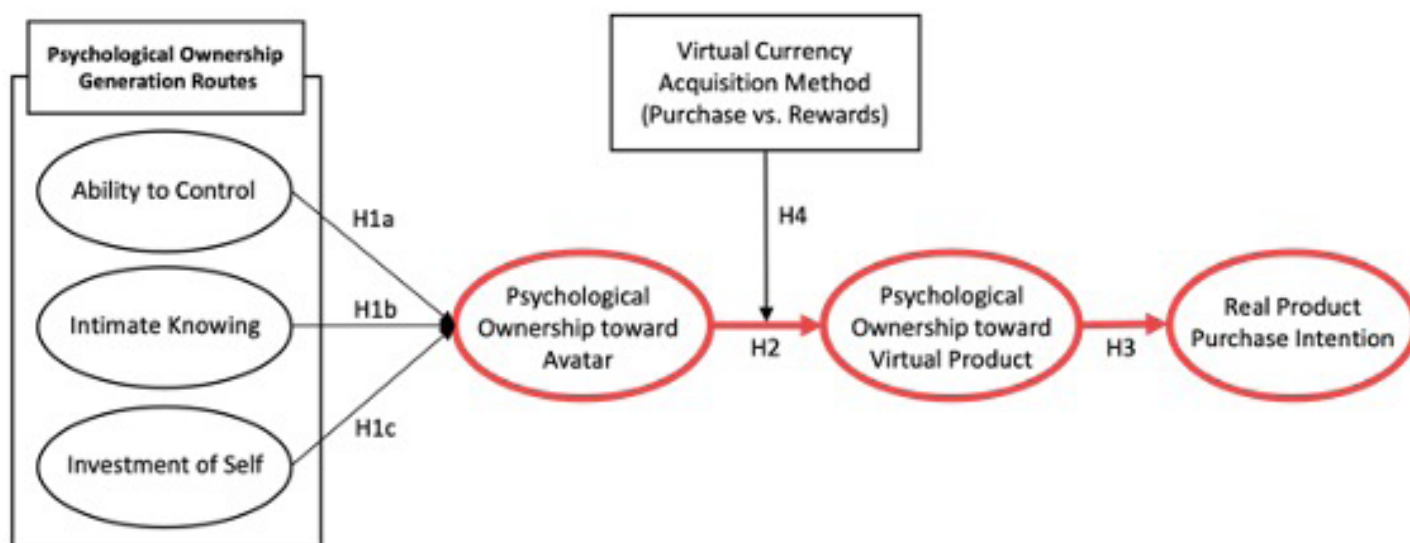
Ex) If a person has psychological ownership toward their job, this feeling can spread to their organization

2. Literature Review



- User can manipulate their avatar in the metaverse, participating in activities in the metaverse.
- User can change their avatar's appearance, including body shape, hairstyle, and facial appearance.
- Through the detailed customization and personalization of their avatars, users develop an intimate knowledge of these digital representations.
- The creation and ongoing modification of an avatar (e.g., time & effort) can significantly amplify the psychological ownership towards the avatar.

H1: Three routes (a: Ability to control, b: Intimate knowledge, and c: Investment of self) positively affects Psychological Ownership toward the avatar.



- Psychological ownership can manifest proximally and distally and transfer from the proximal to the distal target (Kirk et al., 2015; Danckwerts & Kenning, 2019). Since the avatar is an extension of the self (Belk, 2013), users can develop psychological ownership toward the virtual products their avatars wear
- Owning a virtual product can create a desire for its physical counterpart, as users may want to experience the item tangibly.

H2: Psychological Ownership toward the avatar positively influences Psychological Ownership toward the virtual product

H3: Psychological Ownership toward the virtual product positively affect the purchase intention of the real version of the product

2. Literature Review



- Two primary methods of earning virtual currency (Onlinehelpguide, 2022)
 - Direct purchase: By paying real money to the metaverse platform
 - Reward system: By participating in a reward system (e.g., daily attendance or special events)
- Compared to direct purchasing, earning virtual currency through the reward system is more time- and effort-intensive, increasing psychological ownership

H4: The relationship between psychological ownership towards the avatar and psychological ownership towards the virtual product will be moderated by the method of virtual currency acquisition. Specifically, this effect will be stronger when users acquire virtual currency through a reward system rather than by direct purchase.

3. Methods

☐ Samples

- Metaverse users who have experience in ZEPETO
- Online survey (Amazon Mechanical Turk)
- 276 participants (95 Female, 178 Male)
- Randomly assigned to Group A (Direct Purchase) or Group B (Reward)
- Each group saw different scenarios

☐ Measurements

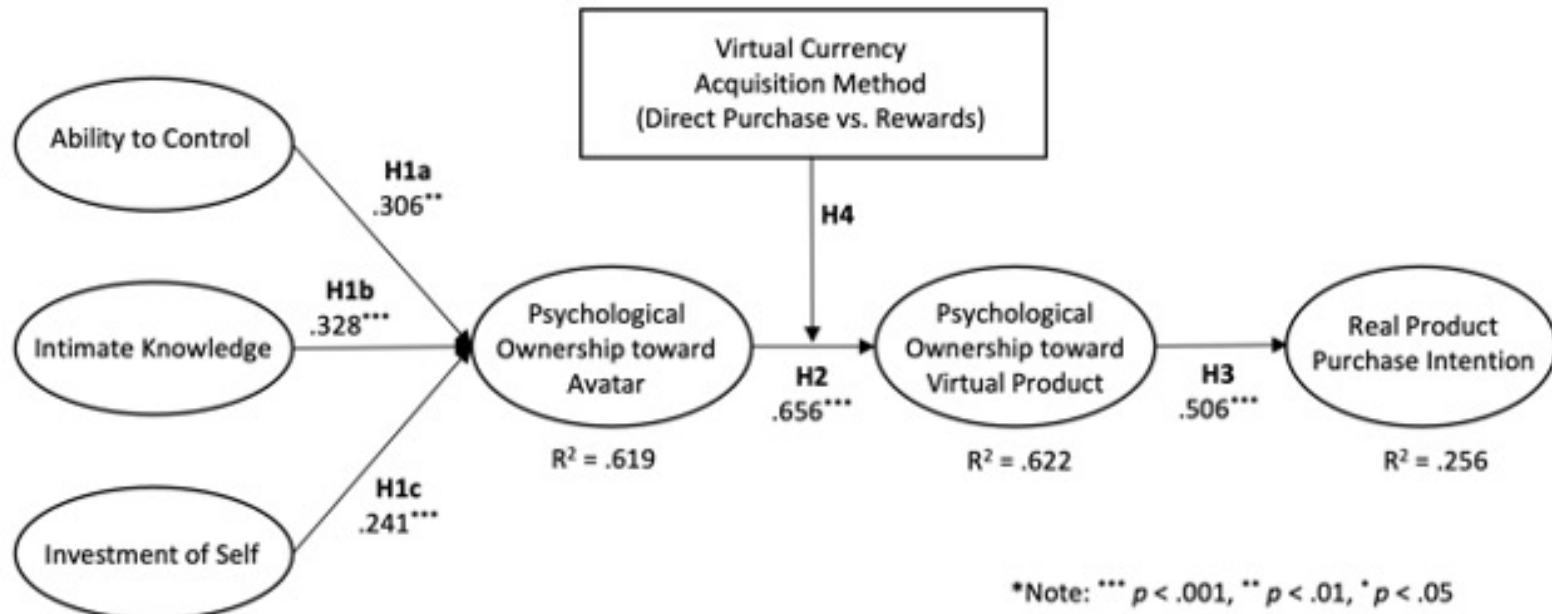
- All measurements were borrowed from previous literatures

☐ Reliability and Validity Check

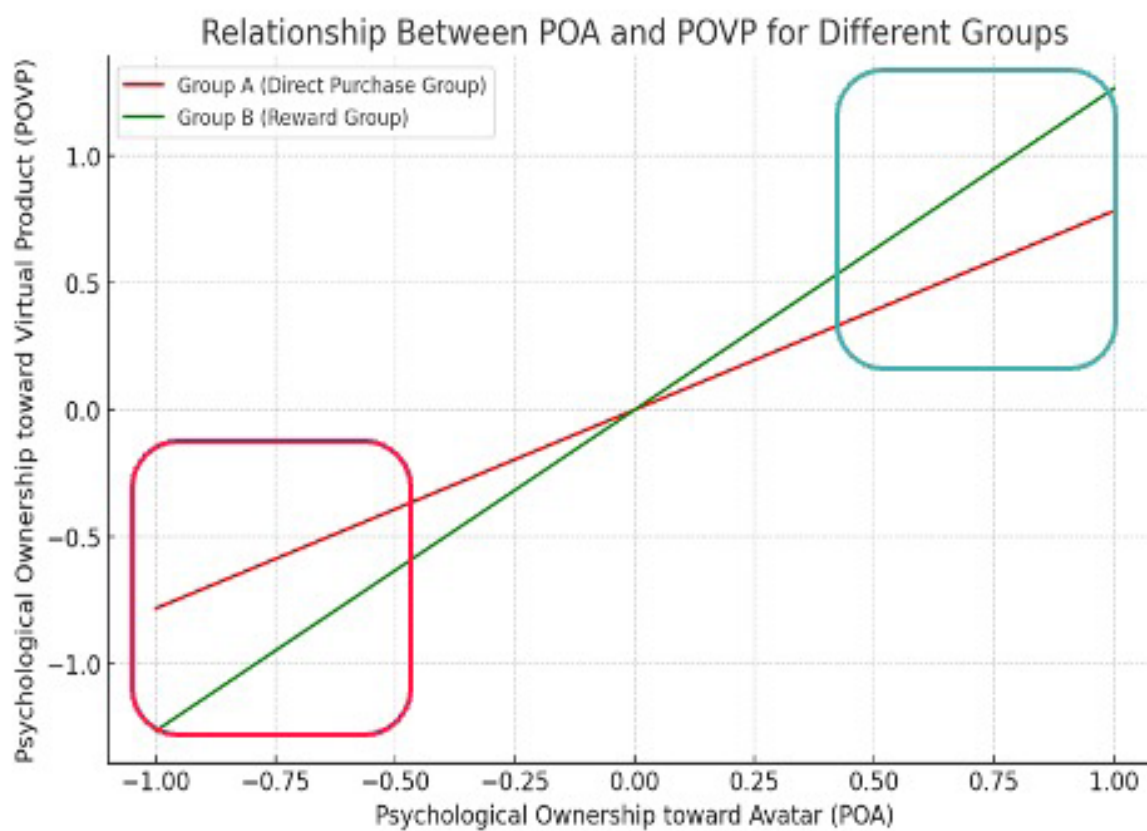
- Exploratory factor analysis (EFA)
- Indicator validity, internal consistency, convergent validity, and discriminant validity (SPSS)
- Partial least square (PLS) structural equation modeling (SEM) (Smart PLS 4.0)
- Model fit ($R^2 > 0.1$ and $SRMR < 0.1$)

4. Results

PLS Results



Moderation Effect Test



- **At lower levels of psychological ownership toward avatar**
Users who directly purchase virtual currency shows higher psychological ownership toward the virtual product compared to the users who earned virtual currency via a reward system
- **At higher levels of psychological ownership toward avatar**
Users who earned virtual currency via a reward system shows higher psychological ownership toward virtual product compared to the users who directly purchase virtual currency

4. Discussion & Implications

□ Discussion

- The study confirms the application of **psychological ownership theory** in the digital world, especially metaverse
- Psychological ownership towards an avatar develops through control, knowledge, and self-investment that already known as three routes in developing psychological ownership
- Psychological ownership **extends from the avatar (proximal target) to virtual items used by the avatar (distal targets)**.
- Virtual currency earning methods moderate the relationship between psychological ownership towards the avatar and psychological ownership towards virtual items.

□ Implications

- Retailers should encourage **customization and knowledge-building features** for avatars to strengthen users' psychological ownership
- Virtual items may be more valued and sought after if users have a sense of ownership over their avatars
- **Reward-based earning systems** can lead to higher psychological ownership and may influence real-world purchasing decisions
- Platforms should consider the **balance between direct purchase and reward systems** to optimize user investment and satisfaction.

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