



Contents lists available at ScienceDirect

International Journal of Research in Marketing

journal homepage: www.elsevier.com/locate/ijresmar

Exploring player cocreation dynamics on the gaming platform: Interplay of goal fulfillments, orchestration actions, and platform affordances

Hsiu-Yu Hung^a, Ajay Kumar^b, V. Kumar^{c,f,*}, Chih-Cheng Lin^d, Kim Hua Tan^e

^a College of Management, National Taiwan Normal University, Taiwan

^b EMLYON Business School, Lyon, France

^c Goodman School of Business, Brock University, ON, Canada

^d International College, Shih Chien University, Taipei City, Taiwan

^e University of Nottingham Business School, United Kingdom

^f Chang Jiang Scholar, HUST, Wuhan, China

ARTICLE INFO

Article history:

Received 8 January 2024

Available online xxxx

Keywords:

Game developers

Roblox

Creation

Co-creation

Platform affordances

Goal fulfillment

ABSTRACT

Understanding player co-creation dynamics on gaming platforms is crucial for fostering engagement and driving innovation in digital marketing. This study investigates these dynamics on the Roblox platform, proposing an integrated framework that connects platform capabilities with player-driven orchestration actions and the pursuit of diverse goals – a model applicable to various digital marketing contexts. We identify three types of gaming platform affordances and three types of developers' orchestration actions, ultimately shaping co-creation activities in terms of creative and social engagement. Using web crawling and text mining methodologies, we analyze a large, longitudinal dataset from Roblox developers engaged in co-creation projects. We employ three observable metrics to quantify co-creation activities, applying different perspectives including equality-based, effort-based weighted, and specialized measures of creative and social engagement. Our findings confirm the direct effects of platform affordances and orchestration actions on co-creation activities, with post-hoc analyses revealing goal fulfillment as an important antecedent mechanism. To validate our results, we conducted a two-stage survey with 206 experienced Roblox developers, providing additional robustness to our empirical findings. This research advances our understanding of digital co-creation and offers practical implications for designing more engaging and innovative gaming platforms. As gaming and digital marketing converge, particularly in the evolving metaverse landscape, this study underscores the importance of leveraging co-creation dynamics to enhance user engagement and drive platform growth.

© 2024 The Author(s). Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The video game industry, currently valued at \$200 billion and projected to reach \$285 billion by 2027, has significantly outpaced other digital media sectors such as video-on-demand and digital music. Its evolution from the 1980s arcade games

* Corresponding author..

E-mail addresses: shirlyhung@gapps.ntnu.edu.tw (H.-Y. Hung), akumar@em-lyon.com (A. Kumar), vk@brocku.ca (V. Kumar), cclin@g2.usc.edu.tw (C.-C. Lin), Kim.tan@nottingham.ac.uk (K.H. Tan).

<https://doi.org/10.1016/j.ijresmar.2024.12.003>

0167-8116/© 2024 The Author(s). Published by Elsevier B.V.

This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

to today's diverse platforms, including mobile, PC, and console gaming, marks a substantial transformation (IJRM Call for Papers, 2023). This dynamic environment has given rise to innovative platforms that epitomize the industry's shift from traditional gameplay to immersive, community-driven experiences. These platforms set trends in digital entertainment through innovative design, fostering environments where developers transcend their roles as mere consumers to become active creators and collaborators (Fields, 2022; Schudey et al., 2023; Oh et al., 2023). This shift to player creation and co-creation is central to our study, which investigates these dynamics within interactive gaming communities and provides actionable insights for marketers seeking to deepen user engagement and foster a stronger connection with consumers through interactive platforms.

Roblox, a key example of this evolution, is a platform where users transcend their roles as developers to design, build, and share content, contributing to an expansive co-creation environment (Fields, 2022; Schudey et al., 2023). While this study uses Roblox as a focal point, our findings are applicable to a broader range of platforms that foster user-generated content and collaboration. The insights gained from examining Roblox's tools, such as Roblox Studio and its social features, offer a comprehensive model of digital co-creation applicable to various platforms. For a detailed overview of Roblox's capabilities, see [Web Appendix A](#). These findings provide valuable implications for understanding how platform design and management foster user innovation and community engagement across multiple digital platforms (Oh et al., 2023; Untaylor, 2022).

Table B in [Web Appendix B](#) presents an overview of recent literature on value creation and co-creation in marketing, highlighting the current state of knowledge and revealing several important research gaps. Previous studies have predominantly explored platform-related and individual-related mechanisms at a conceptual level (Kumar et al., 2019), yet they often overlook the complex behaviors associated with co-creation within gaming platform contexts. Our research addresses this oversight by providing empirical evidence that integrates the interplay between platform mechanisms and developers' intrinsic motivations, offering a nuanced examination of how developers contribute to value co-creation within a gaming platform.

First, although the concept of platform affordances has been discussed in various studies (e.g., Lin et al., 2019; Scaraboto and Figueiredo, 2022; Brodie et al., 2019), and insights from Dellaert (2019), Ciuchita et al. (2023), and Hammedi, Leclercq, and Steils (2023) underscore the imperative for strategic platform design, the specific influence of these affordances on co-creation activities within gaming platforms has not been thoroughly examined. Developers have different expectations and rely on various "platform affordances"—the capabilities and features offered by the platform—to achieve their goals (Khansa et al., 2015; Markus & Silver, 2008). Managerially, by prioritizing and optimizing platform affordances, gaming platforms can differentiate themselves in a competitive market, attract and retain talented creators, and foster a vibrant and innovative community.

Second, while recent literature has introduced the concept of consumer orchestration actions (Scaraboto and Figueiredo, 2022), there is a lack of empirical studies quantifying these actions and their impact on co-creation in gaming contexts. Developers commonly encounter significant challenges in their co-creation endeavors (Eckhardt et al., 2019; Möhlmann & Geissinger, 2018; Sundararajan, 2019) and must initiate various orchestration actions to overcome obstacles. These orchestration actions are critical drivers of co-creation, as they enable developers to coordinate, collaborate, and contribute effectively within the complex terrain of a gaming platform. For example, when creating a new game, developers often recruit team members with complementary skills through the Roblox Developer Forum or other community channels. Through network experimentation, developers discover each other's strengths and combine skills to create popular games, while trust investment ensures they can rely on each other to meet deadlines and share resources. From a manager's perspective, understanding and supporting developers' orchestration actions can facilitate a more seamless and rewarding co-creation experience, leading to increased platform growth.

Third, while existing literature acknowledges the importance of consumer motivations in value co-creation (e.g., Akaka and Schau, 2019; Danatzis et al., 2022; Danaher et al., 2023), there is limited empirical research on how diverse personal goals align with platform objectives in gaming contexts. Developers' goals and their co-creation engagements are multifaceted and highly personalized—raising issues of alignment between developers, other developers, and the gaming platform sponsor (Füller et al., 2014; Von Krogh et al., 2012). Platform practitioners face challenges balancing these diverse personal goals with business objectives (Nambisan et al., 2018; West, 2020). For instance, Roblox developers and parents may have different perceptions of fun, immersion, and learning, along with differing views on spending and earning money through plugins. Our study addresses this gap by offering a comprehensive empirical examination of developers' goal structures within gaming platforms.

Therefore, to address these identified gaps and managerial challenges, our study aims to answer the following research question: How do platform affordances, developers' orchestration actions, and their diverse goals shape co-creation activities within the Roblox community? To clarify the theoretical constructs central to this study, Table C in [Web Appendix C](#) provides definitions and examples of these key concepts.

Next, capturing the co-creation dynamics among game developers requires rich, nuanced data that provides insights into the underlying motivations and processes driving these behaviors. Web-scraped textual data, such as online reviews, forum discussions, and in-game chat logs, has been shown to be pivotal for unveiling individual insights (Berger et al., 2020; Boegershausen et al., 2022). While marketing scholars have leveraged online textual data from various sources to gain consumer insights (Culotta & Cutler, 2016; Herhausen et al., 2019; Liu et al., 2018; Netzer et al., 2012; Van Laer et al., 2019), empirical studies specifically addressing co-creation behaviors within gaming contexts remain sparse. The Roblox developer platform, which explicitly facilitates user-generated content and fosters a community of creators, is an ideal context for researching co-creation behaviors (see [Web Appendix A](#) for a detailed overview of Roblox's key features). By analyzing

the textual data generated by developers on gaming platforms like Roblox, we can gain valuable insights into their motivations, perceptions, and strategies related to co-creation activities. To effectively capture and analyze this rich textual data, we employ a Python algorithm and web scraping techniques to efficiently collect longitudinal and large-scale textual data from 2,882 Roblox developers' posts, received replies, and their comments to others. By transforming this textual data into numerical data, we rigorously explore and examine our proposed research framework and hypotheses.

Finally, our study makes several key contributions. First, we introduce an integrated framework combining platform affordances theory with orchestration actions theory, offering novel insights into how platform design and user actions drive engagement and value creation in digital ecosystems, particularly in gaming platforms like Roblox. Second, we empirically validate three types of orchestration actions and platform affordances through large-scale textual data analysis, transforming these abstract concepts into measurable entities with enhanced relevance in digital marketing research. Third, our findings highlight the role of goal fulfillment as an antecedent mechanism, rather than a mediating one, with extrinsic goals exhibiting a more pervasive positive influence on platform affordance perceptions and orchestration actions compared to other goal types. This offers an alternative perspective for managers designing co-creation marketing projects on platforms like Roblox. Fourth, this research reveals the shifting perspective in consumer roles from passive participants or firms' targets to active co-creators, further emphasizing the need to refine data collection strategies and leverage the rich data generated from co-creation activities to gain insights. Ultimately, our research offers a perspective on transforming conventional digital marketing practices (Kumar, 2018) through a co-creative marketing lens, aligning with the IJRM special issue's focus on Player Behavior and Engagement and contributing to the development of effective engagement and marketing strategies for gaming platforms and beyond.

2. Theoretical Background and hypotheses development

This section establishes our theoretical framework for co-creation activities in gaming platforms. We first define developers' co-creation activities, then examine the influence of platform affordances (ideation, collaboration, socialization) and developers' orchestration actions (aligning/rewiring relations, trust investment, network experimentation) on these activities. We develop hypotheses throughout, culminating in an integrated research model.

2.1. Developers' cocreation activities

Content co-creation refers to the collaborative process where multiple users contribute to the generation, development, and refinement of digital content within a platform ecosystem (Kohler et al., 2011; Prahalad & Ramaswamy, 2004). In gaming platforms, this involves developers working together to create, modify, and share user-generated content, such as custom game levels and virtual items (Füller et al., 2009). For example, on Roblox, developers can use Roblox Studio to co-create and publish games, which can then be further modified by the community. Similarly, in Minecraft, developers collaborate to build and share virtual worlds and game modes.

Video game co-creation is distinguished by its interactive and iterative design process, which is deeply integrated into game mechanics and player experiences, unlike social media content creation that primarily serves communication or marketing purposes. This integration influences creators' motivations, the content created, and user-platform interactions, impacting engagement and creativity in ways not seen in other digital co-creation contexts.

We conceptualize developers' co-creation activities on gaming platforms as collaborative efforts to develop shared digital outputs, such as game environments and narratives, aligning with contemporary research emphasizing combined creative efforts leading to shared outcomes (Barrera & Shah, 2023; Abhari et al., 2022). In the Roblox community, these activities are crucial for enhancing platform value through innovation and engagement, contributing to both marketing and financial performance (Jaakkola & Alexander, 2014; Van Doorn et al., 2010). The interactive creation of game content not only drives player engagement (Kumar and Kotler, 2024) but also fosters organic community growth, reducing marketing costs and boosting Roblox's revenue through its virtual economy (Harmeling et al., 2017).

To quantify developers' co-creation activities, this research adopts metrics that capture developers' active participation in collaborative content creation. Operational measures of co-creation activities have been refined to better capture the essence and impact of these activities. Following the recommendations from Cennamo & Santaló (2019), we assess co-creation activities through the quantity and impact of digital artifacts created by developers, such as the number of projects or games published. Additionally, community engagement metrics, including the number of published posts regarding the co-creation projects or games and focal developers' comments on others' posts, are used to evaluate the reach and resonance of these co-creations within the community (Pentina et al., 2018). We argue that the number of co-creation projects and posts captures a player's engagement in creative efforts, while the number of comments captures their social engagement. In sum, these three metrics capture two aspects of co-creation activities: engagement in creativity (number of projects and posts related to the projects) and social engagement (number of comments given to others' posts/projects). These two aspects provide a comprehensive assessment of developers' contributions and highlight the collaborative nature of their activities within the gaming community.

2.2. Gaming platform affordances and Developers' cocreation activities

We now draw on the concept of “platform affordances” to theorize the relationships between how developers perceive the features and abilities of the gaming platforms, as well as their own cocreation behaviors and performances.

The theoretical foundation of this examination is grounded in the construct of platform affordances, which has been leveraged extensively in Information Systems (IS) literature to articulate the wide array of actionable opportunities opened up by technological features to diverse developers (Karahanna et al., 2018; Leonardi, 2011; Vaast et al., 2017). The concept of affordances, which was introduced by Gibson (1977), has been leveraged to understand user-technology interactions. Affordances are the potential actions and opportunities available to users when they are interacting with a specific technology. In the context of gaming platforms, affordances become relational, being inherently tied to the specific interactions between developers and the material features of these complex digital environments (Leonardi, 2013). Therefore, the notion of platform affordance arises from the intersection of developers' goals with the technological possibilities offered by platform features (Abhari et al., 2022; Kozinets et al., 2021).

We posit that a player's cocreation actions within a gaming platform are influenced by the degree of congruity between their goals and their perception of the platform's affordances. When platform affordances align with the player's goals, it triggers their attention and promotes goal-oriented actions (Locke & Latham, 2002). Gaming platforms, such as Roblox, offer a wide array of affordances, which include ideation, collaboration, or socialization discussed as follows.

2.2.1. Perceived ideation affordance of gaming platforms and cocreation activities

Ideation affordances enable idea submission, evaluation, and resubmission, and require tools designed for idea development and visualization (Abhari et al., 2022; Muninger et al., 2019). In the context of gaming platforms like Roblox, ideation affordances enable developers to submit, evaluate, and refine ideas for new games or game elements within a dynamic, community-driven environment. These affordances are supported by sophisticated tools designed specifically for idea development and visualization (Muninger et al., 2019). Unlike traditional OI platforms where external actors contribute to predefined problems or innovation tasks (Gama, 2019; Schreier et al., 2012), Roblox provides a sandbox environment where the community plays a significant role in screening and developing ideas (Annosi et al., 2020). Ideation on Roblox is competitive, as only select ideas are chosen for further development (Kornish & Ulrich, 2014). However, it can also be financially rewarding. Developers who create popular games on the platform can earn Robux, the virtual currency of Roblox. This currency can be acquired through in-game purchases by developers and can be converted to real money by developers through Roblox's revenue sharing program (Annosi et al., 2020).

Co-creation activities, as defined in the context of gaming platforms, involve developers collaborating to create, modify, and share various types of user-generated content (Füller et al., 2009). The Roblox platform exemplifies this by providing developers with tools like Roblox Studio, which enables them to work together on creating and publishing their own game experiences. Given that ideation affordances facilitate the submission, evaluation, and refinement of ideas, it is likely that these affordances positively influence developers' engagement in co-creation activities. When developers perceive the platform as offering robust ideation affordances, they are more likely to actively participate in collaborative content creation, such as developing shared digital outputs like game environments, narratives, and artifacts (Barrera & Shah, 2023; Abhari et al., 2022). Therefore, we propose:

H1: There is a positive relationship between a platform's ideation affordance and developers' engagement in co-creation activities on gaming platforms (e.g., Roblox).

2.2.2. Perceived collaborations affordance of gaming platforms and cocreation activities

Collaboration affordances on gaming platforms like Roblox are realized through various tools and systems that enable developers to work together on developing and refining game content, including evaluation and ranking systems, tools for product enhancement, and social survey instruments (Muninger et al., 2019). Collaboration may be established between the lead game developer and community members who contribute to the further development and refinement of the game (Stanko, 2016). The community can collaboratively select promising game ideas and work together to develop and enhance them (Schreier et al., 2012), supporting game developers in improving their initial concepts (Camacho et al., 2019; Piller & Ihl, 2013).

Content co-creation involves developers working together to create, modify, and share user-generated content (Füller et al., 2009). We hypothesize that collaboration affordances positively influence developers' engagement in co-creation activities. When developers perceive the platform as offering robust collaboration affordances, they are more likely to actively participate in collaborative content creation (Barrera & Shah, 2023; Abhari et al., 2022). The interactive creation of game levels or items drives player engagement and fosters community growth, benefiting the platform's revenue (Harmeling et al., 2017). Therefore, we propose:

H2: There is a positive relationship between a platform's collaboration affordance and developers' engagement in co-creation activities on gaming platforms (e.g., Roblox).

2.2.3. Perceived socialization affordance of gaming platforms and cocreation activities

Socialization affordances on gaming platforms like Roblox are demonstrated by profile management, the ability to follow others, and communication channels (Abhari et al., 2020; 2022). These affordances support ideation and collaboration by helping developers become part of the community (Carillo et al., 2017; Dingler & Enkel, 2016). Developers use social features to build profiles, connect with others, ask questions, share experiences, and explore networking opportunities (Corral de Zubielqui et al., 2019). These social mechanisms build a community with shared interests and trust (West, 2020).

We hypothesize that socialization affordances positively influence developers' engagement in co-creation activities. When developers perceive the platform as offering robust socialization affordances, they are more likely to actively participate in collaborative content creation (Barrera & Shah, 2023; Abhari et al., 2022). The interactive creation of game levels or items drives player engagement and fosters organic community growth, benefiting the platform's revenue (Harmeling et al., 2017). Therefore, we propose:

H3: There is a positive relationship between a platform's socialization affordance and developers' engagement in co-creation activities on gaming platforms (e.g., Roblox).

2.3. Player' orchestration actions and their Co-Creation activities

Building upon the contribution of Scaraboto and Figueiredo (2022), we consider how developers strive to overcome the inherent difficulties associated with cocreation behaviors within the gaming platform. These challenges prompt a diverse range of actions, leading to positive cocreation performances (Chen et al., 2018). We term these actions "developers' orchestration actions," which denotes their role in aiding developers to mitigate the challenges of cocreating unique and valuable experiences in the gaming platform. In this research, we employ three primary categories of orchestration actions: alignment and rewiring relations, trust investments, and network experimentation.

2.3.1. Aligning and rewiring relations and cocreation activities

Due to developers' wide-ranging heterogeneity, the co-creation process often experiences friction, which aligning and rewiring actions aim to resolve (Scaraboto & Figueiredo, 2022). Aligning actions include screening for compatible co-creation partners, cueing to direct co-creative experiences, flexing to illustrate mutual compromises, and buffering to mitigate potential harm to reputations. These actions are similar to the co-creation concepts of partner filtering and identifying (Roberts et al., 2022). Other actions—interest grouping, signaling, enclaving, and reconciling—come under the broad orchestration umbrella of rewiring relations (Scaraboto & Figueiredo, 2022). Developers employ these actions to effectively negotiate the communal and transactional aspects of their co-creation partnerships, adapting their relationships to better align with their individual goals. By facilitating player-to-player relationships through aligning or rewiring, gaming firms can help developers overcome the difficulties of co-creating with heterogeneous partners (Makkar et al., 2020). The cost savings enabled by interconnections improve the efficiency of co-creation performances (Scaraboto & Figueiredo, 2022).

In the context of gaming platforms like Roblox, developers' co-creation activities involve collaborating to create, modify, and share user-generated content (Füller et al., 2009), leading to the development of shared digital outputs (Barrera & Shah, 2023; Abhari et al., 2022). As aligning and rewiring actions facilitate more effective collaboration among developers, they are likely to contribute to increased co-creation activities, ultimately benefiting the gaming platform. Co-creation activities enhance platform value through innovation and engagement, contributing to both marketing and financial performance (Jaakkola & Alexander, 2014; Van Doorn et al., 2010; Harmeling et al., 2017). Therefore, we hypothesize:

H4: There is a positive relationship between developers' engagement in aligning and rewiring relations and their engagement in co-creation activities on gaming platforms.

2.3.2. Trust investment and cocreation activities

Trust investment actions are pivotal for enhancing co-creation activities on gaming platforms like Roblox. These actions, which include revealing, cultivating reviews, and scaffolding, are employed by developers to navigate the complexities of establishing trust with potential cocreation partners (Scaraboto & Figueiredo, 2022). Revealing actions allow developers to demonstrate their own integrity and assess the trustworthiness of others, which is crucial in a virtual environment where interactions often occur with partners of diverse values and behaviors. Cultivating reviews helps in showcasing a player's reliability and consistency, enhancing their reputation within the community (Morgan & Hunt, 1994). Scaffolding, or the gradual building of trust through small and successive engagements, allows for reducing uncertainties and fostering a controlled familiarity among participants (Frei & Morriss, 2020; Luo et al., 2021).

These trust-building measures are essential not only for reducing risks associated with cocreation but also for facilitating more effective and fruitful collaborations on the platform. Trust investment is akin to laying a foundation upon which robust partnerships can be built—partnerships that are crucial for sustained cocreative efforts and the successful development of new content (Scaraboto & Figueiredo, 2022). This is particularly important in gaming platforms, where the collaborative creation of game levels, virtual items, and gameplay modifications necessitates a high degree of interpersonal trust and mutual dependability. By improving interpersonal trust, these trust investment actions enhance developers' willingness to engage

deeply in cocreation activities, thus contributing positively to the platform's innovative output and overall community dynamics. As such, trust investment is hypothesized to have a positive impact on cocreation activities:

H5: There is a positive relationship between developers' engagement in trust investment and their engagement in co-creation activities on gaming platforms.

2.3.3. Network experimentation and cocreation activities

Network experimentation in gaming platforms like Roblox encompasses innovative actions that enhance and personalize developers' cocreation experiences. These actions include creative resourcing, role improvisation, and repurposing, which broaden the spectrum of cocreation possibilities (Scaraboto & Figueiredo, 2022). Creative resourcing introduces new resources into the cocreation ecosystem, enabling developers to explore a wider array of cocreation activities. Role improvisation allows developers to adopt new roles and scripts, enhancing the depth and diversity of cocreation experiences (Itani et al., 2022). Repurposing extends to redefining goals or value propositions of interactions, possibly extending beyond the platform's initial offerings, thus expanding the creative boundaries within which developers operate.

These network experimentation actions are pivotal for fostering a dynamic environment where developers can explore and enact personalized, innovative cocreation pathways (Beverland et al., 2023). By facilitating such flexibility and innovation, network experimentation actions significantly impact the quality and uniqueness of the cocreative outcomes. This not only enhances the individual player's engagement and satisfaction but also contributes to the overall vibrancy and diversity of the gaming community's creative outputs.

In the context of Roblox, where developers are continuously engaged in creating, modifying, and sharing digital content like game levels and virtual items, network experimentation actions play a crucial role. They allow developers to transcend traditional gameplay boundaries and engage in more personalized and meaningful cocreation activities. This increased agency and creative freedom likely lead to higher quality contributions and more profound community interaction, which are essential for sustaining the platform's growth and vibrancy (Füller et al., 2009; Harmeling et al., 2017). Given the significant role of network experimentation in enhancing cocreation activities by enabling personalization and innovation, we propose the following hypothesis:

Hypothesis H6: There is a positive relationship between developers' engagement in network experimentation and their engagement in co-creation activities on gaming platforms..

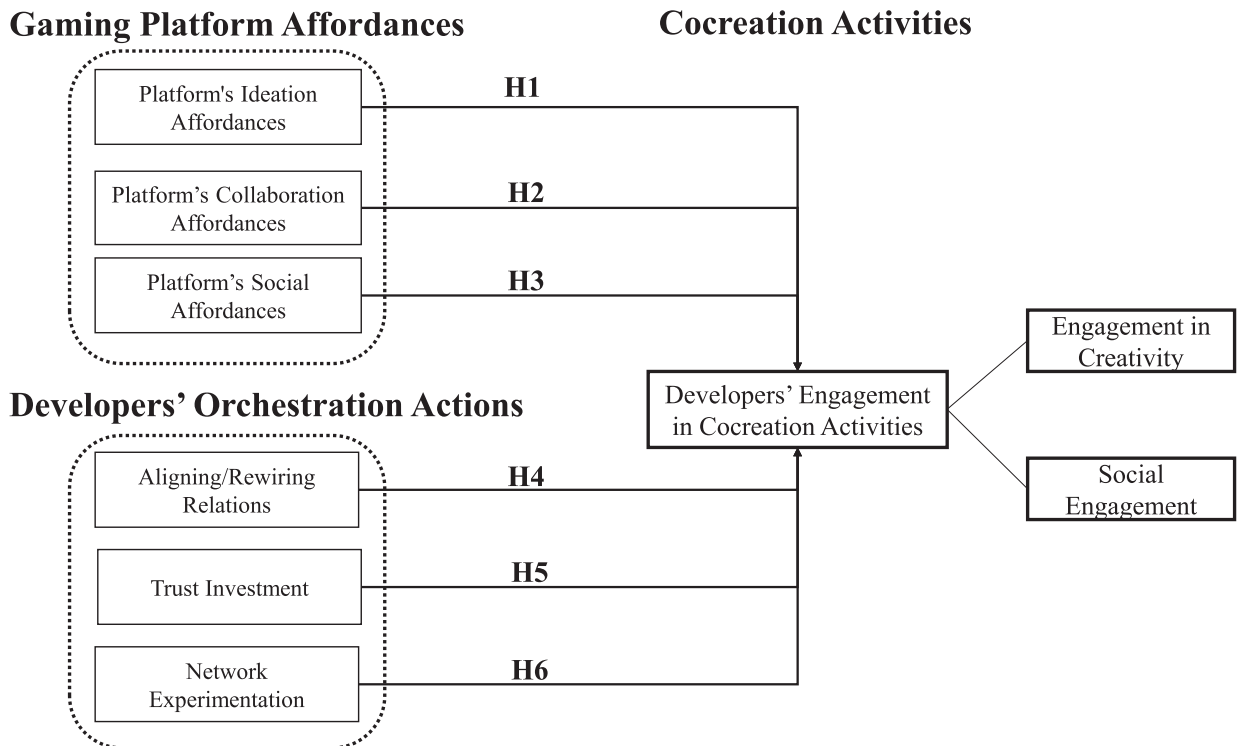


Fig. 1. Main research model

Finally, our discussions lay a foundation for constructing the main research model depicted in Fig. 1. This model integrates two crucial theoretical perspectives: (1) developers' perceptions of platform affordances, which encompass ideation, collaboration, and socialization affordances; and (2) developers' orchestration actions, including aligning and rewiring relations, trust investment, and network experimentation. These elements serve as antecedent mechanisms that shape developers' co-creation activities, which we conceptualize as comprising two aspects: engagement in creativity and social engagement within the gaming platform.

Building on the main research model, we further explore the role of goal fulfillment and its relationships with platform affordances, orchestration actions, and co-creation activities, as shown in Figs. D.1 and D.2 in Web Appendix D. Grounded in self-determination theory (SDT) and other goal theories (Deci & Ryan, 2000, 2012; Ajzen & Madden, 1986; Locke & Latham, 2006), these models posit that individual goals significantly influence behavioral intentions and actions.

SDT classifies goals as extrinsic, intrinsic, or internalized extrinsic (Deci & Ryan, 2000; Mack & Landau, 2020; Von Krogh et al., 2012). In Roblox, extrinsic goals relate to financial gain and recognition (Frey et al., 2011; Li et al., 2012), internalized extrinsic goals involve entrepreneurship and growth (Oreg & Nov 2008), and intrinsic goals encompass socialization and enjoyment (Oishi et al., 2013; Frey et al., 2011). We propose two perspectives on goal fulfillment's role.

Goal Fulfillment as mediating mechanisms (Fig. D.1): This view suggests that platform affordances and orchestration actions shape users' motivations and goals, which then drive co-creation activities (Deci & Ryan, 2000; Ryan & Deci, 2017). For instance, collaboration affordances may enhance intrinsic goals related to community engagement (Muninger et al., 2019; Mack & Landau, 2020), while network experimentation may reinforce extrinsic goals like financial rewards (Scaraboto & Figueiredo, 2022; Nenonen et al., 2019).

Goal Fulfillment as antecedent mechanisms (Fig. D.2): This perspective, aligned with goal-directed behavior theory (Bagozzi & Dholakia, 1999) and the uses and gratifications approach (Katz et al., 1973), posits that pre-existing goals influence how users perceive platform affordances and engage in orchestration actions. For example, users driven by extrinsic goals may prioritize affordances leading to financial rewards (Von Krogh et al., 2012; Acar, 2019), while those with intrinsic goals may focus on features that enhance community involvement (Abhari et al., 2020, 2022).

Our study also aims to examine the interrelationships among platform affordances, orchestration actions, and goal fulfillment, recognizing that these constructs operate within a dynamic system. Ideation affordances, for instance, may support extrinsic goals by offering financial rewards and recognition but also fulfill intrinsic goals by providing creative satisfaction and personal accomplishment. Additionally, ideation affordances may foster internalized extrinsic goals by aiding skill development and entrepreneurial growth. By exploring these multifaceted relationships, as depicted in Figs. D.1 and D.2, our study offers a nuanced understanding of how platform affordances, user actions, and motivational fulfillment drive co-creation activities in gaming platforms.

3. Methodology

3.1. Data description

To conduct the empirical exploration of the cocreation process, we utilized text data to generate insights into the cocreation activities of developers on the Roblox platform. Roblox is a popular gaming platform (Dwivedi et al., 2022) that provides developers with the requisite technology to manifest their imaginations and develop communities. On Roblox, developers can engage in a variety of co-creative activities with other developers, from crafting rudimentary avatar accessories to designing immersive 3D experiences. We applied a Python algorithm to crawl the Roblox developer platform and harvest its developers' posts (the posts are regarding the cocreation projects), the corresponding feedback they received, and the comments they give to others as well as the detailed information about the co-creation projects and the developers' information. Please reference the Web Appendix E for the detailed description of the data collection process on Roblox Platform.

Our dataset encompasses 2,882 Roblox developers with co-creation experience, integrating both qualitative (27,844 original posts, 193,293 replies, and 93,552 comments) and quantitative data. We capture two key dimensions of co-creation activities: Creative Engagement (measured by co-creation projects and related posts) and Social Engagement (quantified by comments on others' posts). Acknowledging the disparate effort levels required for different activities, we conducted sensitivity analyses to determine appropriate weightings. We evolved from an equally weighted composite measure (33.33 % each for projects, posts, and comments) to models assigning greater weight to project creation, exploring schemes ranging from 50 % (projects), 25 % (posts), 25 % (comments) to 90 % (projects), 5 % (posts), 5 % (comments). This nuanced approach allows for a more accurate reflection of the relative importance and effort associated with various co-creation activities, providing a robust measure of developer engagement and contribution in digital platforms.

Next, we processed the qualitative text data from the posts, comments received, and comments given by the focal developers. This process involved converting unstructured textual data into numeric values to generate operational measures for nine focal constructs: three types of perceived platform affordances, three types of developers' orchestration actions, and three types of goal fulfillment. Our approach was guided by Balducci and Marinova's (2018) process framework for unstructured data analysis in marketing research and Berger et al.'s (2020) guidelines for text analysis workflows. We then conducted a dictionary-based analysis, detailed in the following sections, to systematically quantify the qualitative data and integrate it into our overall analysis framework.

3.2. Employing the text mining Technique and Dictionary-Based analysis

In our study, we employed a combination of a standard LIWC dictionary to analyze the variables in our man research model (presented in Fig. 1). This approach was chosen to ensure that the dictionaries used were well-suited to measure the specific constructs of interest. For constructs specific to our research context, such as platform affordances and orchestration actions, we found that the standard, developed dictionary did not sufficiently capture the unique language used within the Roblox community. The Roblox platform has its own specific terminology and expressions that may not be adequately represented in a general-purpose dictionary like LIWC. Therefore, to accurately measure these constructs, we developed a custom-built dictionary that better reflects the specific language and context of the Roblox platform. By creating a self-developed dictionary tailored to the Roblox community, we can ensure that the words and phrases used to measure platform affordances and orchestration actions are relevant and representative of the constructs being studied. This approach aligns with recommendations from previous research (Rocklage et al., 2018; Singh et al., 2020; Balducci and Marinova, 2018; Humphreys and Wang, 2018; Marinova et al., 2018; Perreault and Leigh, 1989) and involves a rigorous process for dictionary development and validation, as outlined in Table 1 (step 1–4).

In our first step, we compiled an initial list of words and phrases from 2,882 Roblox developers' focal posts regarding their co-creation projects, their received replies to these focal posts, and the comments they made on others' posts. We inputted these posts and comments into the WordStat 9 natural language processing (NLP) software and mined the unstructured text data for the most frequently used words and phrases. This process generated an initial 2,160 words/phrases, which we then cleaned by removing stop words and conducting spell-checking.

In our second step, we developed a coding schema for the platform affordance concepts that aligns with prior academic definitions. We provided the academic definition of each affordance concept and the survey instruments that previous contributors developed to measure them. For instance, ideation affordance is defined as Roblox developers' perceptions that the platform can support the submission of new ideas, game designs, or other creations (Abhari et al., 2022). Collaboration affordance is defined as developers' perception that the Roblox platform can support collaborations with other developers to develop or improve new games, ideas, designs, or other creations (Abhari et al., 2022). Socialization affordance is defined as the perception that the Roblox platform can support socialization tasks such as connecting, communication, and networking (Abhari et al., 2022). We conceptualized Roblox developers' orchestration actions as follows: Aligning and Rewiring Relations is the ability to align experiential elements with those of diverse co-creation partners, using the platform's affordances to navigate and integrate the communal and transactional aspects of their relations (Scaraboto & Figueiredo, 2022). Trust Investment involves managing platform resources to reduce the risk associated with transient interactions with unfamiliar developers (Scaraboto & Figueiredo, 2022). Network Experimentation is the process by which Roblox developers utilize resources, roles, and goals to co-create experiences, thereby expanding the possibilities for unique, personalized, and valuable interactions within the Roblox network (Scaraboto & Figueiredo, 2022). Moreover, the survey items related to the above

Table 1
The procedure for dictionary development and dictionary-based analysis.

Steps	Actions	Outputs or Results
1. Extract Words/Phrases	Collect words/phrases from 2,882 focal Roblox developers' original posts (27,884 in total), their received replies on these posts (193,293 in total), and the 93,552 comments they made on other developers' project posts using WordStat 9 software for entity extraction.	Generated an initial 2,160 words/phrases and cleaned the data by removing stop words and conducting spell-checking.
2. Develop the Coding Schema	Develop a coding scheme by integrating: – Academic definitions and survey items of focal constructs – Parts of speech representing focal constructs	Achieved a coding schema with six categories: (1) Ideation affordances (2) Collaboration affordances (3) Socialization affordances (4) Network experimentation (5) Trust investment (6) Aligning/rewiring relations
3. Develop the Custom Dictionary	Recruit two independent raters A and B with Roblox experience. Raters classify the words/phrases into six focal constructs based on the coding scheme from Step 2. Conduct interrater reliability check and resolve minor inconsistencies. Create the refined dictionary Conduct final interrater reliability check	Developed the custom dictionary, Achieved face validity and construct validity for the six categories in the custom dictionary. The six categories include: Ideation affordances (64 words/phrases) Collaboration affordances (81 words/phrases) Socialization affordances (54 words/phrases) Network experimentation (152 words/phrases) Trust investment (74 words/phrases) Aligning/rewiring relations (56 words/phrases)
4. Evaluate Validity of Custom Dictionary	(1) Test face validity with two Roblox experts C and D. Test construct validity through the saturation approach with two independent raters E and F.	

constructs can be found in our [Web Appendix L](#), Table L.1. The coding scheme incorporated part-of-speech rules for tagging; we assigned linguistic tags to the focal constructs (e.g., nouns/noun phrases were assigned to perceived platform affordances, and verbs/verb phrases to developers' orchestration actions).

We began the third step of developing the custom dictionary by recruiting two independent raters with Roblox experience. The two raters categorized the words and phrases from the first step into six categories, based on the coding schema developed in Step 2. We assessed the inter-rater consistency (Berger et al., 2020) between our raters, reaching 93 % agreement after three iterations. Two marketing professors then resolved the remaining inconsistencies.

In our fourth step, we addressed the validity of the custom dictionary developed in Step 3. We began by confirming face validity. Two reviewers with extensive experience as Roblox developers and senior developers were recruited to assess the dictionary's adequacy and appropriateness for measuring the intended six constructs. The average agreement between the two reviewers across five categories exceeded the established 0.90 threshold, achieving a score of 0.96 (Rust & Coolil, 1994). Any remaining inconsistencies were addressed and resolved through discussion. Subsequently, we assessed the construct validity of the custom dictionary using a saturation approach (Berger et al., 2020). We engaged two marketing graduate research assistants, who were not involved in the dictionary development process in Step 3 and the aforementioned face validity check. These two assistants were asked to categorize 20 % of the coded words or phrases from each category. They correctly classified more than 90 % of the selected words/phrases into their expected dimensions, comfortably exceeding the 80 % agreement target (Berger et al., 2020). We then continued with four additional runs to evaluate the remaining 80 % of the dictionary. This iterative process ensured that all words/phrases belonging to the six categories consistently achieved above 90 % agreement between the two newly recruited raters. This process yielded our final custom dictionary, which comprised six categories, each associated with a varying number of words or phrases: platform ideation affordance (64 words/phrases), platform collaboration affordance (81 words/phrases), platform socialization affordance (54 words/phrases), developers' network experimentation actions (152 words/phrases), trust investment actions (74 words/phrases), and aligning/rewiring relations actions (56 words/phrases). The full list of words/phrases for each category can be found in [Web Appendix F](#), Table F.1.

Based on our custom-developed dictionary comprising six major categories and their corresponding words/phrases, we further refined our analysis by developing sentiment-based subcategories for each category to provide a more nuanced understanding of user perceptions. Using the Natural Language Toolkit (NLTK), we analyzed a 10–15 word context window around each dictionary word/phrase and assigned sentiment scores. Sentiment was categorized with thresholds of > 0.05 for positive, < -0.05 for negative, and between these values for neutral, following established text analysis practices. Words were then grouped into sentiment subcategories based on the dominant sentiment frequency, with a 60 % minimum threshold for robust categorization. These sentiment-based subcategories were integrated under each of the six major categories (see Appendix F, Table F.2). This refined method allows us to differentiate between positive, neutral, and negative mentions of platform affordances and orchestration actions, addressing potential misinterpretations that can arise from relying solely on keyword frequency. This approach provides a more accurate representation of user sentiment.

The above steps detail the development of custom dictionaries to measure six key constructs related to platform affordances and orchestration actions. In the next phase, we focused on coding additional constructs related to goal fulfillment—developers' extrinsic goals, internalized extrinsic goals, and intrinsic goals—as presented in our extended research model (see Figs. D.1 and D.2 in [Web Appendix D](#)). To measure these constructs, we employed the LIWC 2022 standardized dictionary, a tool extensively validated and widely used in research to capture psychological constructs, including goal-related language (Boyd et al., 2022; Pennebaker et al., 2015; Tausczik & Pennebaker, 2010). The LIWC dictionary's established validity and reliability make it an appropriate choice for assessing goal-related constructs. We selected specific LIWC categories that best reflect the psychological constructs associated with each type of goal. For intrinsic goals, we utilized the LIWC categories of positive emotion (Posemo), social, leisure, friends, and play, which provide insights into personal satisfaction, social engagement, and leisure activities. Internalized extrinsic goals were captured through the LIWC categories of achievement, work, and job, reflecting external goals that have been internalized and are now personally significant. Finally, extrinsic goals were measured using the LIWC categories of money, reward, power, and status, emphasizing the tangible rewards, professional advancement, and financial achievement associated with these goals. The following [Table 2](#) provides a summary of the conceptual definitions and operationalization of key variables in our main research model and extended research models.

Next, we transformed our unstructured textual data into structured numeric data using the LIWC 2022 software, applying both the standard LIWC dictionary (for goal fulfillment constructs) and our custom dictionaries (for platform affordance and orchestration action constructs). This process enabled us to convert Roblox developers' posts, received responses, and comments into interpretable numeric data. Each developer yielded nine output variables: three related to affordances (ideation, collaboration, socialization), three related to actions (aligning/rewiring relations, trust investment, network experimentation), 18 sentiment-based subcategories (positive, neutral, negative) across these six major constructs, and three variables related to goals (intrinsic, extrinsic, internalized extrinsic). For platform affordances and orchestration actions, we analyzed posts, replies, and comments. However, for goal fulfillment constructs, we focused solely on focal posts, as they more accurately reflect developers' intrinsic and extrinsic motivations without the influence of conversational context. Detailed information on the textual data transformation process is available in [Web Appendix G](#).

[Table 3](#) presents basic information regarding the six key variables (platform affordances and orchestration actions) based on their overall mentions (including positive, neutral, and negative sentiments) at the developer level on the Roblox plat-

Table 2

Summary of conceptual definition and operationalization of key variables.

Major Construct (Definition)	Key Variables	Conceptual Definition of Key Variables	Operationalization of Key Variables
Platform Affordances (The potential actions and opportunities that a platform's features provide to users)	Ideation Affordances	The degree to which a platform supports users in submitting, evaluating, and refining ideas.	Self-developed dictionary (See Web Appendix Table F.1 and F.2 for sentiment subcategories)
	Collaboration Affordances	The degree to which a platform enables users to work collaboratively on developing and improving shared content.	Self-developed dictionary (See Web Appendix Table F.1 and F.2 for sentiment subcategories)
	Socialization Affordances	The degree to which a platform facilitates interactions, connections, and community building among users.	Self-developed dictionary (See Web Appendix Table F.1 and F.2 for sentiment subcategories)
Orchestration Actions (Actions taken by users to manage and enhance their co-creation activities)	Aligning & Rewiring Relations	Developers' engagement in activities that resolve friction and improve collaboration through relationship and role adjustments.	Self-developed dictionary (See Web Appendix Table F.1 and F.2 for sentiment subcategories)
	Trust Investment	Developers' engagement in activities that build trust among users to facilitate collaboration.	Self-developed dictionary (See Web Appendix Table F.1 and F.2 for sentiment subcategories)
	Network Experimentation	Developers' engagement in innovative actions to enhance co-creation experiences through exploration of new resources and roles.	Self-developed dictionary (See Web Appendix Table F.1 and F.2 for sentiment subcategories)
Goal Fulfillments (The degree to which users achieve their intrinsic, extrinsic, and internalized extrinsic goals through platform interactions)	Intrinsic Goals	Goals related to enjoyment, altruism, and socialization	LIWC 2022 standardized dictionary (categories: Social, Friends, Posemo, Leisure, Play)
	Extrinsic Goals	Goals related to financial gain and recognition	LIWC 2022 standardized dictionary (categories: Money, Reward, Power, Status)
	Internalized Extrinsic Goals	Goals related to entrepreneurship, growth, and learning	LIWC 2022 standardized dictionary (categories: Work, Job, Achieve)
Cocreation Activities (Collaborative processes where users generate, develop, and refine content together)	Engagement in Creativity	The degree to which developers actively participate in generating and developing new ideas, projects, or content collaboratively.	Number of projects or games published Number of published posts regarding the cocreation projects or games (Platform activity logs)
	Social Engagement	The degree to which developers interact, communicate, and collaborate with others within the platform community.	Comments given to others' posts/project (Platform activity logs)

Table 3

Basic information among overall mentions of focal variables.

	Ideation Affordances	Collaboration Affordances	Social Affordances	Aligning/Rewiring Relations	Trust Investment	Network Experiment
Ideation Affordances	1.000	0.144**	0.080**	0.075**	0.086**	0.141**
Collaboration Affordances	0.144**	1.000	0.121**	0.152**	0.093**	0.153**
Social Affordances	0.080**	0.121**	1.000	0.076**	0.038*	0.082**
Aligning/Rewiring Relations	0.075**	0.152**	0.076**	1.000	0.050**	0.130**
Trust Investment	0.086**	0.093**	0.038*	0.050**	1.000	0.196**
Network Experimentation	0.141**	0.153**	0.082**	0.130**	0.196**	1.000
Mean	18.760	11.680	10.040	7.030	23.810	19.390
S.D	19.099	16.049	15.326	12.162	22.045	19.446

Note 1: ** indicates significance at the 0.01 level; * indicates significance at the 0.05 level.

Note 2: The mean value indicates the average percentage of words in each comment thread related to focal variables according to the self-developed and LIWC dictionaries.

Note 3: The SD (standard deviation) value represents the variability of these percentages across all comment threads.

form. Additional details about the Roblox developers are provided in [Web Appendix H](#), Table H.1. For further information on the 18 sentiment-based subcategories across these six major variables, as well as the three goal-related variables, please refer to Table H.2 in [Web Appendix H](#).

4. Empirical results

4.1. Examine main hypotheses

To test Hypotheses H1-H6, we employed a series of regression models with carefully constructed independent and dependent variables while controlling for potential endogeneity. Our study examined six major independent variables: Ideation Affordances, Collaboration Affordances, Socialization Affordances, Aligning & Rewiring Relations, Trust Investment, and Network Experimentation. To capture nuanced impacts, we further categorized each variable into three sentiment-based subcategories: Positive, Neutral, and Negative, resulting in 18 distinct measures.

We tested four model specifications to ensure robustness. Model 1 used the original six major categories as overall independent variables, such as the original Ideation Affordance measure without distinguishing between positive, neutral, or negative mentions. Model 2, referred to as the No-Negative Model, incorporated both positive and neutral measures for each category (e.g., Ideation Affordance_Positive and Ideation Affordance_Neutral). Model 3 included only positive mentions of the six independent variables (e.g., Ideation Affordance_Positive). Finally, Model 4 focused exclusively on negative mentions of the six independent variables (e.g., Ideation Affordance_Negative). This approach enabled us to examine the impact of the independent variables across different sentiment dimensions and assess the robustness of our findings.

For the dependent variable, we operationalized co-creation activities using three key indices: projects created, posts published, and comments provided by focal developers. To ensure robustness, we applied multiple weighting approaches to these indices. Initially, we tested an equally weighted model, assigning one-third weight to each index in [Table 4](#). Subsequently, we employed an effort-based weighted measure that assigns different weights to activities based on the presumed level of effort involved. [Table J](#) in [Web Appendix J](#) presents the results for a 50 %-25 %-25 % weighting scheme (co-creation projects: 50 %, posts: 25 %, comments: 25 %). Additional sensitivity analyses exploring other weighting combinations (e.g., 60 %-20 %-20 %, 70 %-15 %-15 %, 80 %-10 %-10 %, and 90 %-5 %-5 %) are detailed in [Web Appendix I](#), Table I.1.

We further analyzed co-creation activities by separating them into two distinct aspects: Engagement in Creativity and Social Engagement. Engagement in Creativity comprises the number of projects created and posts published. For this aspect, we tested various weighting schemes, ranging from an equal distribution (50 % projects, 50 % posts) to effort-based distributions (e.g., 60 % projects, 40 % posts, up to 90 % projects, 10 % posts). [Table 4](#) presents the results for the 50 %-50 % weighting scheme, while [Web Appendix I](#), Table I.2 provides additional sensitivity analyses for other weighting combinations.

To address potential endogeneity concerns, we incorporated a set of control variables into our regression models. These controls were selected based on their potential correlation with our key independent variables. Specifically, we included: (1) the number of replies received by focal developers, (2) the number of likes received on posts, (3) the number of likes on developers' replies, (4) the number of likes on developers' comments, (5) the log-transformed number of visits to co-creation games, and (6) the log-transformed number of upvotes received by games. By incorporating these controls, we aimed to isolate the effects of our key independent variables and mitigate potential confounding factors.

[Table 4](#) presents results from our primary analysis (Model 2), which examines three key dependent variables: equally weighted co-creation activities, engagement in creativity, and social engagement. The complete analysis, including all model specifications and dependent variables (including an effort-based weighted measure of co-creation activities), is available in [Web Appendix J](#) (Table J).

Table 4
Major regression analysis results (Model 2).

DVs=	Equally Weighted of Cocreation Activities		Engagement in Creativity		Social Engagement	
	Coefficient	T	Coefficient	T	Coefficient	T
Positive + Neutral Mention of IVs						
(1) Ideation Affordance	0.031	0.963	0.016	0.503	0.033	1.022
(2) Collaboration Affordances	0.076*	2.278	0.074*	1.970	0.071*	2.111
(3) Social Affordance	0.160***	4.619	0.140***	4.036	0.147***	4.223
(4) Aligning & Rewiring Relations	0.061*	2.136	0.063*	2.178	0.053	1.846
(5) Trust Investment	0.033	0.970	0.048	1.432	0.023	0.687
(6) Network Experimentation	0.041	1.326	0.016	0.519	0.045	1.431

Note 1: *** means significant at 0.001 level; ** means significant at 0.01 level; * means significant at 0.05 level.

Note 2: control variables include (1) the number of replies received, (2) the number of likes received on posts, (3) the number of likes on developers' replies, (4) the number of likes on developers' comments, (5) the log-transformed number of visits to games, and (6) the log-transformed number of upvotes received by games.

Our primary analysis reveals two key patterns. First, among platform affordances, social affordances demonstrate the strongest positive influence on co-creation activities ($\beta = 0.160$, $p < 0.001$, supporting H3), followed by collaboration affordances ($\beta = 0.076$, $p < 0.05$, supporting H2). The positive impact of social affordances remains consistent across multiple engagement measures, including engagement in creativity ($\beta = 0.140$, $p < 0.001$) and social engagement ($\beta = 0.147$, $p < 0.001$). Second, among orchestration actions, aligning and rewiring relations show consistent positive effects (supporting H4) on both co-creation activities ($\beta = 0.061$, $p < 0.05$) and engagement in creativity ($\beta = 0.063$, $p < 0.05$), highlighting the importance of relationship management within platform ecosystems.

To establish the robustness of our findings, we examined alternative model specifications (Web Appendix J, Table J). Model 1, analyzing overall mentions, provides broad support for our hypotheses (H1-H6). Model 3, focusing on only positive mentions, corroborates the effects of collaboration affordances (H2), social affordances (H3), and aligning and rewiring relations (H4). Notably, Model 4, examining negative mentions, reveals that negative perceptions of trust investment ($\beta = -0.143$, $p < 0.01$, supporting H5) and network experimentation ($\beta = -0.069$, $p < 0.05$, supporting H6) significantly diminish co-creation activities. These patterns remain consistent when using an effort-based weighted measure of co-creation activities (DV2, Web Appendix J, Table J), further validating our findings across different operationalizations of the dependent variable. Collectively, these analyses demonstrate the robustness of our results while illuminating how both positive and negative perceptions shape co-creation processes in gaming platform environments.

4.2. Endogeneity Diagnose

To assess potential bias from omitted variables in our regression models, we employed the Oster (2019) method, which evaluates coefficient stability. We compared the baseline model (without control variables) to Model 1 (with controls) from Table 4. The Oster method was used to compute adjusted coefficients (β^*), which were then compared to the controlled coefficients (β_c). Coefficient stability between baseline, controlled, and bias-adjusted models is a critical indicator of robustness (Oster, 2019). Differences (Δ) between β_c and β of less than 0.05 are typically considered negligible in terms of introducing substantial bias. In our analysis, most variables showed differences within this threshold. For each relationship, we calculated the interval $[\beta - (\beta_c - \beta) / 3, \beta_c]$ and verified that β^* falls within it. All bias-adjusted coefficients (β^*) were within this robust interval, indicating that unobservable factors do not substantially influence the relationships between our independent variables and co-creation activities. Detailed results are available in Web Appendix K.

Additionally, sensitivity analyses presented in Web Appendix I, Tables I.1 and I.2, further corroborate our findings. These analyses, which explored various weighting schemes for our dependent variables demonstrate consistent trends across different specifications. The effort-based weighted measure of co-creation activities showed stable relationships with our independent variables across multiple weighting combinations (e.g., 60 %-20 %-20 %, 70 %-15 %-15 %, 80 %-10 %-10 %, and 90 %-5 %-5% for projects, posts, and comments, respectively). Similarly, the analysis of engagement in creativity, comprising projects created and posts published, exhibited robustness across various weighting schemes, ranging from an equal distribution (50 % projects, 50 % posts) to effort-based distributions (e.g., 60 % projects, 40 % posts, up to 90 % projects, 10 % posts). The consistency of these results across different operationalizations of our dependent variables mitigates concerns about the sensitivity of our results to specific measurement choices.

4.3. Additional Analyses-Examine extended research models regarding the role of goal fulfillment

We conducted two extended research models (Fig. D.1 and Fig. D.2) using process models (path analysis) to test the role of goal fulfillment as either an antecedent (the antecedent model) or a mediator (the mediation model). Based on the comparison of specific and total indirect effects between the two models, it is evident that goal fulfillment as an antecedent offers a more robust explanation for co-creation activities on gaming platforms. In the antecedent model, the total indirect effect of fulfilling developers' extrinsic goals on co-creation activities is notably significant at 0.441 with a T-statistic of 6.168 ($p < 0.001$), and the indirect effect through collaboration affordances is 0.131 with a T-statistic of 4.600 ($p < 0.001$). In contrast, the mediation model shows weaker indirect effects, such as the indirect effect of network experimentation through intrinsic goals on co-creation activities, which is 0.011 with a T-statistic of 3.986 ($p < 0.001$), and a lower total indirect effect for intrinsic goals at 0.014 with a T-statistic of 4.337 ($p < 0.001$). These findings suggest that while goal fulfillment can mediate the relationship between platform affordances and co-creation activities, the antecedent model provides a stronger and more comprehensive explanation. Therefore, treating goal fulfillment as an antecedent is more effective in explaining how pre-existing goals drive user engagement and co-creation, emphasizing the need for platform features that align with users' goals to enhance participation and contribution. Please refer to Web Appendix L for the model specifications, as well as Table L.1 and Table L.2 for detailed analysis results and further discussion on the comparison between the two extended research models.

4.4. Robustness checking

To ensure the robustness of our findings, we implemented a two-stage survey methodology targeting participants involved in Roblox co-creation projects. In the initial stage, we used screening questions and queries about participants' experience with Roblox to identify qualified respondents. Only those who met our criteria for experienced Roblox developers

were invited to participate in the comprehensive second stage. Ultimately, 206 developers with co-creation experience participated. Detailed descriptions of the survey process, along with the survey items and information about the developers, are available in [Web Appendix M](#) (Tables M.1 to M.4).

Table M.5 in [Web Appendix M](#) presents the path coefficients of our main research model using the survey data. The results confirm that all six hypotheses (H1-H6) are supported, showing significant positive relationships between ideation affordances, collaboration affordances, social affordances, network experimentation, trust investment, and aligning/rewiring relations with co-creation activities. Additionally, Tables M.6 and M.7 compare the extended research models (Figs. D.1 and D.2) regarding the role of goal fulfillment. The comparison suggests that goal fulfillment as an antecedent plays a stronger role in influencing various affordances and orchestration actions compared to its role as a mediator. These findings align with the results in Tables L.1 and L.2, which used text data and dictionaries to measure the variables. The consistent support for goal fulfillment as an antecedent across both data sources and methodological approaches strengthens the validity of our research findings.

5. Discussion and Conclusion

5.1. General discussion of the empirical results

Our study presents and empirically tests a comprehensive theoretical model that explains developers' co-creation activities on gaming platforms. This model integrates two interconnected theoretical perspectives: gaming platform affordances and developers' orchestration actions, culminating in two dimensions of co-creation activities—engagement in creativity and social engagement. Moreover, our supplementary analysis investigates goal fulfillment as both an antecedent and a mediating mechanism within this framework, offering novel insights into how user motivations influence co-creation.

We employed a longitudinal textual dataset from Roblox developers' online interactions, where custom dictionaries were developed to quantify platform affordances and orchestration actions, while LIWC 2022 was used to assess goal fulfillment. Co-creation activities were operationalized through three metrics: the number of co-creation projects and published posts (capturing creative engagement) and comments on others' posts (representing social engagement).

Our analysis, supported by multiple model specifications and extensive robustness checks, consistently affirmed our hypotheses (H1-H6). Across various operationalizations of co-creation, including engagement in creativity and social engagement, the results indicate that ideation, collaboration, social affordances, and orchestration actions like network experimentation and trust investment are critical for fostering player engagement. The endogeneity analysis revealed minimal differences between controlled and adjusted coefficients, suggesting that the findings are robust against potential omitted variable bias.

Further, the goal fulfillment analysis revealed a stronger role as an antecedent, providing a more robust explanation for co-creation activities than as a mediator. Comparisons between text-based (web-crawled data) and survey-based analyses showed consistency, particularly in the significance of extrinsic goals. These goals demonstrated robust positive associations with collaboration, ideation, and social affordances, as well as with network experimentation and aligning relations actions, reinforcing the importance of external motivations in driving co-creation behaviors.

Our study's robustness was thoroughly tested through two complementary approaches: analyzing different subsets of textual data (original posts, received replies, and given comments) in [Web Appendix N](#) and conducting a two-stage survey with 206 experienced Roblox developers in [Web Appendix M](#). Both methods consistently supported our main hypotheses (H1-H6), reinforcing the validity of our findings across diverse data sources and methodological approaches.

6. Theoretical contributions

This study contributes to the existing research literature in multiple ways. First, our research advances the ongoing academic dialogue in IJRM on consumer value co-creation in community settings, as exemplified by the work of [Ramaswamy and Ozcan \(2016\)](#). By examining co-creation dynamics within the context of Roblox's interactive gaming platform, our research offers parallels to and extensions of their established framework. Ramaswamy and Ozcan conceptualized relational brand engagement platforms as systems designed to connect stakeholders, facilitate innovation, and foster collective co-creational interactions. Our study empirically expands this concept within the gaming domain. We provide evidence of how specific platform affordances—namely ideation, collaboration, and socialization—serve as crucial enablers of user co-creation activities. This granular examination of platform mechanisms extends Ramaswamy and Ozcan's work, offering a more detailed understanding of how digital platforms can catalyze and enhance co-creation processes. Additionally, we identify specific orchestration actions (such as aligning relations and trust investment) that mirror the managerial interventions Ramaswamy and Ozcan deemed necessary for maintaining and enhancing co-creational ecosystems. Moreover, our research on developers' perceived social affordances and relationship dynamics within the Roblox platform complements the insights of [Kim and Rao \(2022\)](#) on network multiplexity in social network games. While Kim and Rao demonstrate that developers active across multiple games exert greater influence on game visits, our findings add depth by revealing that the effective utilization of social affordances, combined with developers' proactive engagement in rewiring and aligning relationships, significantly enhances co-creation engagement. This synergy between individual player behavior and network

structures provides a comprehensive view of how actions within a network amplify engagement and influence across gaming platforms. Additionally, we extend the work of [Rutz et al. \(2019\)](#) on mobile game engagement by specifically examining player co-creation behaviors in Roblox, offering a deeper insight into the quality and depth of player involvement, especially focusing on developers' co-creation (collaboration) projects. This perspective enriches their view of engagement, which previously focused on frequent usage. Therefore, integrating our findings with Rutz and colleagues' perspective can provide a more nuanced understanding of gaming platform engagement, blending usage patterns with co-creative activities, which can advance theoretical knowledge in game engagement studies.

Second, our research advances co-creation theory in digital marketing by integrating the frameworks of platform affordances ([Abhari et al., 2022](#)) and orchestration actions ([Scaraboto & Figueiredo, 2022](#)) into a unified research model. This integration illuminates how platform design (affordances) and user behavior (orchestration actions) synergistically facilitate co-creation activities in gaming platforms, offering insights applicable to various digital marketing contexts. We conceptualize and operationalize three key types of affordances—ideation, collaboration, and socialization—providing empirical evidence of their role in enabling user co-creation. This granular examination extends previous work (e.g., [Abhari et al., 2022](#); [Nambisan et al., 2017](#)), offering a more nuanced understanding of how digital platforms catalyze co-creation processes. Our findings reveal these affordances as significant determinants of co-creation activities, even in complex gaming environments, contributing to the literature on digital platform design and user engagement in marketing. Simultaneously, we empirically validate the impact of orchestration activities on co-creation, building on [Scaraboto and Figueiredo's \(2022\)](#) theoretical work. We demonstrate how specific orchestration actions—such as aligning relations, trust investment, and network experimentation—positively relate to various forms of co-creation activities. This validation transforms orchestration actions from theoretical concepts to measurable constructs, advancing our understanding of user-driven value creation in digital platforms.

Third, our extended research model, examining goal fulfillment as an antecedent or mediator among platform affordances, orchestration actions, and co-creation activities, provides valuable insights. Our findings align with and extend [Abhari et al.'s \(2022\)](#) framework, reinforcing goal fulfillment as a stable antecedent across both web-crawled and survey data, demonstrating consistency across data collection methods. We confirm that extrinsic and internalized goals significantly relate to ideation and collaboration affordances, corroborating [Abhari et al.'s \(2022\)](#) findings. Notably, our study reveals that extrinsic goals show strong connections to all affordances (ideation, collaboration, and socialization), suggesting a broader motivational influence than previously recognized by [Abhari et al. \(2022\)](#). Additionally, we contribute to goal fulfillment and self-determination theory (SDT) by categorizing developers' goals into three types and extending SDT ([Ryan & Deci, 2000](#)) through the integration of platform affordance theory ([Leonardi, 2011](#); [Leonardi, 2013](#); [Abhari et al., 2022](#); [Nambisan et al., 2017](#)) and orchestration action theory ([Scaraboto & Figueiredo, 2022](#)). This integration enriches goal fulfillment theory by applying it to gaming co-creation contexts, explaining how developers' goals interact with perceived affordances and orchestration actions to drive co-creation activities. Our findings highlight the critical role of extrinsic and internalized goals, particularly in contexts where collaboration and ideation affordances are essential for fostering co-creation on platforms like Roblox.

Fourth, our research bridges the gap between co-creation in gaming and other digital platforms by offering a holistic model that integrates user engagement, platform design, and peer-to-peer interactions. This contribution enriches the literature on digital marketing and platform engagement in several key ways. We synthesize concepts from game studies and digital marketing, providing a comprehensive model of user co-creation that highlights the impact of engagement on platform success. This model extends beyond gaming and offers insights applicable to various digital contexts, such as social media platforms, online communities, and creative platforms ([Smith et al., 2012](#); [Johnson et al., 2015](#); [Baker & Nelson, 2005](#); [Füller et al., 2014](#); [Jeppesen & Lakhani, 2010](#); [Boudreau & Lakhani, 2013](#)). As a result, our model provides transferable insights that can inform strategies in other sectors where user input is crucial, addressing the growing need in marketing research for frameworks that explain and predict consumer behavior across diverse digital environments ([Yadav & Pavlou, 2020](#); [Hamilton et al., 2021](#)). Furthermore, we shift the focus from business-to-consumer to consumer-to-consumer interactions, contributing to the existing platform literature ([Abhari et al., 2022](#); [Akman et al., 2019](#); [Chen et al., 2018](#); [Dellaert, 2019](#); [Markovic et al., 2021](#)) by examining the complex dynamics of peer-to-peer interactions. This perspective is further reinforced by recent studies that emphasize the importance of peer-to-peer interactions in digital ecosystems ([Hamilton et al., 2021](#)). Finally, by adopting a holistic view of co-creation that incorporates perspectives from both consumers and gaming platforms, we provide a comprehensive theoretical framework. This synthesis integrates the concepts of perceived platform affordances with developers' orchestration actions, deepening our understanding of how consumers interact with and utilize platform affordances to enhance their co-creation activities. This dual perspective extends recent work on consumer-firm interactions in digital environments, offering fresh insights into the co-creative process ([Appel et al., 2020](#)).

6.1. Managerial Application

This research provides actionable insights for Roblox, brands, and other platform managers seeking to optimize user engagement through co-creation.

First, to enhance co-creation and align with its strategic goals, Roblox should prioritize developing features that support ideation affordances (e.g., brainstorming tools, creative project templates, intuitive design toolkits), collaboration affor-

dances (e.g., collaborative project management tools, incentivized teamwork), social affordances (e.g., in-game chat, community forums), network experimentation (e.g., player-matching systems based on shared interests, social network visualizations), trust investment (e.g., reputation-building mechanisms, transparent feedback systems), and aligning/rewiring relations (e.g., player profile customization, relationship mapping tools). These affordances, along with managerial interventions regarding designers' orchestration actions, will make game creation more accessible, help creators connect, streamline co-creation, and foster a strong sense of community. By focusing on these affordances and the corresponding managerial interventions, such as aligning relationships and building trust, Roblox can create a more engaging environment for co-creation, driving sustained user engagement and platform growth.

Second, our findings reveal that collaboration and ideation affordances are significantly influenced by extrinsic, intrinsic, and internalized extrinsic goals, with extrinsic goals exerting a more pervasive positive influence on both affordances and orchestration actions than intrinsic or internalized extrinsic goals. This insight suggests that platform managers can prioritize designing extrinsic motivational drivers, while still supporting internalized and intrinsic goals. Therefore, managers are advised to implement structured reward systems offering tangible incentives and develop tiered recognition programs to fulfill extrinsic goals. Additionally, they could gamify the creation process to address intrinsic motivations, and enhance collaboration tools with skill-sharing features to support internalized goals. By strategically balancing extrinsic motivators (e.g., monetary rewards, exclusive items, status indicators) with opportunities for skill development and personal growth, platform managers can create a more engaging environment that drives sustained user participation and platform growth.

Third, to unlock the full potential of co-creation, managers could design features that create synergistic interactions between platform affordances and orchestration actions. For example, integrating ideation processes with network exploration (e.g., collaborative brainstorming sessions, player-matching systems based on creative interests), building trust through collaborative project management (e.g., team reputation scores, community-moderated approval processes), and combining social affordances with aligning/rewiring relations (e.g., in-game social events, player-organized challenges) will help create a vibrant co-creation ecosystem. This approach fosters deeper user engagement, diversifies user-generated content, and offers new revenue opportunities, such as the sale of player-created assets or experiences.

Fourth, brands (not limited to gaming companies) are encouraged to leverage co-creation marketing campaigns by partnering with platforms like Roblox. These brands should design marketing initiatives that stimulate platform developers' extrinsic goals (e.g., rewards, recognition), intrinsic goals (e.g., enjoyment), and internalized goals (e.g., learning, skill-building), which may differ from those of conventional consumers. By aligning their marketing strategies with platform affordances and developers' orchestration actions, brands can foster creative and social engagement around their products or services, expanding their market segments to include gaming/digital platform users, who are often younger demographics. For example, Nike's NIKELAND, in collaboration with Roblox, offers users the opportunity to engage in sports-themed mini-games, design their own virtual Nike gear, and compete in global challenges, tapping into extrinsic motivation through badges, rewards, and leaderboards. Similarly, Gucci partnered with Roblox to provide the Gucci Garden Experience, allowing developers to explore a virtual fashion exhibit and purchase limited-edition virtual items, catering to both extrinsic and internalized goals. These examples showcase how brands can create immersive, interactive experiences that go beyond traditional advertising, enabling authentic brand storytelling and user-generated content. Platforms like Roblox provide a unique opportunity for brands to engage younger demographics who are digital natives and value creative freedom.

Finally, to leverage the evolving role of consumers as active co-creators, platforms could implement sophisticated, AI-powered analytics to track user behavior throughout the co-creation process. For example, a 'Developer Journey' tracking system could monitor interactions with platform affordances, orchestration actions, and co-creation outcomes, enabling personalized recommendations and informed platform design decisions. Additionally, platforms could adopt user-driven governance models, such as a voting system for feature requests, allowing co-creators to influence platform policies and development. This approach not only provides data-driven insights but also fosters a sense of ownership and community among users, reinforcing their transition from passive consumers to active stakeholders in the platform ecosystem. By combining data-driven strategies with user empowerment, platforms can create a more engaging and dynamic co-creation environment, driving sustained user participation and platform growth.

6.2. Limitations and future research directions

While our study provides valuable insights into the dynamics of co-creation in gaming platforms, we acknowledge several limitations that offer fertile ground for future research. First, our analysis aggregated each player's posts and comments across all projects to capture overall perceptions and motivations at the player level. While this approach enabled us to examine hypothesized relationships between perceived platform affordances, orchestration activities, and co-creation activities, it may not fully capture project-specific variations. This limitation presents opportunities for future research. Longitudinal studies could track developers' perceptions and motivations across multiple projects over time, providing a more nuanced understanding of how these factors evolve and influence co-creation behaviors. Additionally, project-level analyses could offer insights into how specific project characteristics impact perceptions, motivations, and subsequent co-creation activities, potentially revealing important contextual factors that influence player engagement.

Second, future research should explore boundary conditions to determine whether certain types of affordances are more effective when paired with specific orchestration actions, and if these impacts vary across different platform types or market contexts. Such investigations could reveal how platform-specific characteristics or market factors moderate the effectiveness

of affordances and orchestration actions in driving co-creation. This line of inquiry would contribute to a more comprehensive understanding of how marketers can optimize platform design and management strategies across diverse digital ecosystems.

Third, future studies could examine the developmental trajectories of creators within gaming platforms like Roblox. Such research could investigate how various platform features influence the fulfillment of creators' evolving motivations and goals throughout their co-creation journey. Understanding the specific objectives creators pursue—such as skill enhancement, social recognition, or monetization—at different stages of their development process would offer valuable insights for platform managers and marketers. Exploring how gaming platforms can better support these goals through targeted affordances and orchestration actions would contribute to our understanding of fostering sustained engagement and innovation in digital co-creation environments.

CRedit authorship contribution statement

Hsiu-Yu Hung: Writing – review & editing, Writing – original draft, Data curation, Conceptualization. **Ajay Kumar:** Writing – review & editing, Conceptualization. **V. Kumar:** Writing – review & editing, Conceptualization. **Chih-Cheng Lin:** Writing – review & editing, Conceptualization. **Kim Hua Tan:** Writing – review & editing, Conceptualization.

Data availability

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

We thank the Guest editors of the special issue, the anonymous reviewers for their valuable guidance during the revision process. We also thank several of our colleagues for their valuable suggestions during the conduct of this study. We thank Renu for copyediting this manuscript.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijresmar.2024.12.003>.

References

- Abhari, K., Davidson, E. J., & Xiao, B. (2020). Modeling social product development process, technology, and governance. *IEEE Transactions on Engineering Management*, 69(2), 409–422. <https://doi.org/10.1109/tem.2020.2973234>.
- Abhari, K., Davidson, E. J., & Xiao, B. (2022). Inventing together: The role of actor goals and platform affordances in open innovation data-centric knowing. *Journal of the Association for Information Systems*, 23(1), 264–302. <https://doi.org/10.17705/1jais.00721>.
- Acar, O. A. (2019). Motivations and solution appropriateness in crowdsourcing challenges for innovation. *Research Policy*, 48(8). <https://doi.org/10.1016/j.respol.2018.11.010> 103716.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5), 453–474. [https://doi.org/10.1016/0022-1031\(86\)90045-4](https://doi.org/10.1016/0022-1031(86)90045-4).
- Akman, H., Plewa, C., & Conduit, J. (2019). Co-creating value in online innovation communities. *European Journal of Marketing*, 53(6), 1205–1233. <https://doi.org/10.1108/ejm-12-2016-0780>.
- Appel, G., Grewal, L., Hadi, R., & Stephen, A. T. (2020). The future of social media in marketing. *Journal of the Academy of Marketing science*, 48(1), 79–95.
- Balducci, B., & Marinova, D. (2018). Unstructured data in marketing. *Journal of the Academy of Marketing Science*, 46(4), 557–590. <https://doi.org/10.1007/s11747-018-0581-x>.
- Barrera, K. G., & Shah, D. (2023). Marketing in the metaverse: Conceptual understanding, framework, and research agenda. *Journal of Business Research*, 155. <https://doi.org/10.1016/j.jbusres.2022.113420> 113420.
- Berger, J., Humphreys, A., Ludwig, S., Moe, W. W., Netzer, O., & Schweidel, D. A. (2020). Uniting the tribes: Using text for marketing insight. *Journal of Marketing*, 84(1), 1–25. <https://doi.org/10.1177/0022242919873106>.
- Beverland, M. B., Cankurtaran, P., Micheli, P., & Wilner, S. J. S. (2023). Co-creating educational consumer journeys: A sensemaking perspective. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-023-00951-5>.
- Boegershausen, J., Datta, H., Borah, A., & Stephen, A. T. (2022). Fields of gold: Scraping web data for marketing insights. *Journal of Marketing*, 86(5), 1–20. <https://doi.org/10.1177/00222429221100750>.
- Boyd, R. L., Ashokkumar, A., Seraj, S., & Pennebaker, J. W. (2022). *The development and psychometric properties of LIWC-22*. University of Texas.
- Cennamo, C., & Santaló, J. (2019). Generativity tension and value creation in platform ecosystems. *Organization Science*, 30(3), 617–641. <https://doi.org/10.1287/orsc.2018.1270>.
- Chen, T., Drennan, J., Andrews, L., & Hollebeek, L. D. (2018). User experience sharing. *European Journal of Marketing*, 52(5/6), 1154–1184. <https://doi.org/10.1108/ejm-05-2016-0298>.
- Culotta, A., & Cutler, J. (2016). Mining brand perceptions from twitter social networks. *Marketing Science*, 35(3), 343–362. <https://doi.org/10.1287/mksc.2015.0968>.

- Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/s15327965pli1104_01.
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. V. Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 416–436). Sage Publications Ltd.
- Dellaert, B. G. C. (2019). The consumer production journey: Marketing to consumers as co-producers in the sharing economy. *Journal of the Academy of Marketing Science*, 47(2), 238–254. <https://doi.org/10.1007/s11747-018-0607-4>.
- Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., Dennehy, D., Metri, B., Buhalis, D., Cheung, C. M. K., Conboy, K., Doyle, R., Dubey, R., Dutot, V., Felix, R., Goyal, D. P., Gustafsson, A., Hinsch, C., Jebabli, I., & Wamba, S. F. (2022). Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 66. <https://doi.org/10.1016/j.ijinfomgt.2022.102542> 102542.
- Eckhardt, G. M., Houston, M. B., Jiang, B., Lamberton, C., Rindfleisch, A., & Zervas, G. (2019). Marketing in the sharing economy. *Journal of Marketing*, 83(5), 5–27. <https://doi.org/10.1177/0022242919861929>.
- Fields, T. (2022). *Game Development 2042: The Future of Game Design, Development, and Publishing*. CRC Press.
- Frei, F. X., & Morris, A. (2020). Begin with trust. *Harvard Business Review*, 98(3), 112–121.
- Frey, K., Lüthje, C., & Haag, S. (2011). Whom should firms attract to open innovation platforms? The role of knowledge diversity and motivation. *Long Range Planning*, 44(5–6), 397–420. <https://doi.org/10.1016/j.lrp.2011.09.006>.
- Füller, J., Hutter, K., Hautz, J., & Matzler, K. (2014). User roles and contributions in innovation-contest communities. *Journal of Management Information Systems*, 31(1), 273–308. <https://doi.org/10.2753/mis0742-1222310111>.
- Füller, J., Mühlbacher, H., Matzler, K., & Jawecki, G. (2009). Consumer empowerment through internet-based co-creation. *Journal of management information systems*, 26(3), 71–102.
- Gibson, J. J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, acting, and knowing* (pp. 67–82). Lawrence Erlbaum.
- Hamilton, R., Ferraro, R., Haws, K. L., & Mukhopadhyay, A. (2021). Traveling with companions: The social customer journey. *Journal of Marketing*, 85(1), 68–92.
- Harmeling, C. M., Moffett, J. W., Arnold, M. J., & Carlson, B. D. (2017). Toward a theory of customer engagement marketing. *Journal of the Academy of Marketing Science*, 45(3), 312–335. <https://doi.org/10.1007/s11747-016-0509-2>.
- Herhausen, D., Ludwig, S., Grewal, D., Wulf, J., & Schoegel, M. (2019). Detecting, preventing, and mitigating online firestorms in brand communities. *Journal of Marketing*, 83(3), 1–21. <https://doi.org/10.1177/0022242918822300>.
- Humphreys, A., & Wang, R.-J.-H. (2018). Automated text analysis for consumer research. *Journal of Consumer Research*, 44(6), 1274–1306. <https://doi.org/10.1093/jcr/ucx104>.
- Itani, O. S., Kalra, A., & Riley, J. (2022). Complementary effects of CRM and social media on customer co-creation and sales performance in B2B firms: The role of salesperson self-determination needs. *Information & Management*, 59(3). <https://doi.org/10.1016/j.im.2022.103621> 103621.
- Jaakkola, E., & Alexander, M. (2014). The Role of Customer Engagement Behavior in Value Co-Creation: A Service System Perspective. *Journal of Service Research*, 17(3), 247–261. <https://doi.org/10.1177/1094670514529187>.
- Karahanna, E., Xu, S. X., Xu, Y., & Zhang, N. (2018). The needs-affordances-features perspective for the use of social media. *MIS Quarterly*, 42(3), 737–756. <https://doi.org/10.25300/misq/2018/11492>.
- Khansa, L., Ma, X., Liginlal, D., & Kim, S. S. (2015). Understanding members' active participation in online question-and-answer communities: A theory and empirical analysis. *Journal of Management Information Systems*, 32(2), 162–203. <https://doi.org/10.1080/07421222.2015.1063293>.
- Kim, H., & Rao, V. R. (2022). The role of network embeddedness across multiple social networks: Evidence from mobile social network games. *International Journal of Research in Marketing*, 39(3), 867–887.
- Kohler, T., Fueller, J., Matzler, K., Stieger, D., & Füller, J. (2011). Co-creation in virtual worlds: The design of the user experience. *MIS quarterly*, 773–788.
- Kozinets, R. V., Ferreira, D. A., & Chiment, P. (2021). How do platforms empower consumers? Insights from the affordances and constraints of reclaiming. *Journal of Consumer Research*, 48(3), 428–455. <https://doi.org/10.1093/jcr/ucab014>.
- Kumar, V. (2018). Transformative marketing: The next 20 years. *Journal of Marketing*, 82(4), 1–12.
- Kumar, V., Rajan, B., Gupta, S., & Pozza, I. D. (2019). Customer engagement in service. *Journal of the Academy of Marketing Science*, 47(1), 138–160.
- Kumar, V., & Kotler, P. (2024). *Transformative Marketing: Combining New Age Technologies and Human Insights*. USA: Palgrave Macmillan.
- Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. *MIS Quarterly*, 35(1), 147–167. <https://doi.org/10.2307/23043493>.
- Leonardi, P. M. (2013). When does technology use enable network change in organizations? A comparative study of feature use and shared affordances. *MIS Quarterly*, 37(3), 749–775. <https://doi.org/10.25300/misq/2013/37.3.04>.
- Li, Y., Tan, C.-H., & Teo, H.-H. (2012). Leadership characteristics and developers' motivation in open source software development. *Information & Management*, 49(5), 257–267. <https://doi.org/10.1016/j.im.2012.05.005>.
- Liu, Y., Jiang, C., & Zhao, H. (2018). Using contextual features and multi-view ensemble learning in product defect identification from online discussion forums. *Decision Support Systems*, 105, 1–12. <https://doi.org/10.1016/j.dss.2017.10.009>.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705–717. <https://doi.org/10.1037/0003-066x.57.9.705>.
- Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Directions in Psychological Science*, 15(5), 265–268. <https://doi.org/10.1111/j.1467-8721.2006.00449.x>.
- Luo, X., Tong, S., Lin, Z., & Zhang, C. (2021). The impact of platform protection insurance on buyers and sellers in the sharing economy: A natural experiment. *Journal of Marketing*, 85(2), 50–69. <https://doi.org/10.1177/0022242920962510>.
- Mack, T., & Landau, C. (2020). Submission quality in open innovation contests - An analysis of individual-level determinants of idea innovativeness. *R&D Management*, 50(1), 47–62. <https://doi.org/10.1111/radm.12345>.
- Makkar, M., Yap, S.-F., & Belk, R. (2020). Stabilising collaborative consumer networks: How technological mediation shapes relational work. *European Journal of Marketing*, 55(5), 1385–1410. <https://doi.org/10.1108/ejm-06-2019-0470>.
- Marinova, D., Singh, S. K., & Singh, J. (2018). Frontline problem-solving effectiveness: A dynamic analysis of verbal and nonverbal cues. *Journal of Marketing Research*, 55(2), 178–192. <https://doi.org/10.1509/jmr.15.0243>.
- Markovic, S., Bagherzadeh, M., Vanhaverbeke, W., & Bogers, M. (2021). Managing business-to-business open innovation: A project-level approach. *Industrial Marketing Management*, 94, 159–163. <https://doi.org/10.1016/j.indmarman.2021.02.009>.
- Markus, M. L., & Silver, M. (2008). A foundation for the study of IT effects: A new look at desanctis and Poole's concepts of structural features and spirit. *Journal of the Association for Information Systems*, 9(10), 609–632. <https://doi.org/10.17705/1jais.00176>.
- Möhlmann, M., & Geissinger, A. (2018). Trust in the sharing economy: Platform-mediated peer trust. In N. M. Davidson, M. Finck, & J. J. Infranca (Eds.), *Cambridge handbook of the law of the sharing economy* (pp. 27–37). Cambridge University Press.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38. <https://doi.org/10.1177/002224299405800302>.
- Muninger, M.-I., Hammedi, W., & Mahr, D. (2019). The value of social media for innovation: A capability perspective. *Journal of Business Research*, 95, 116–127. <https://doi.org/10.1016/j.jbusres.2018.10.012>.
- Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. *MIS Quarterly*, 41(1), 223–238. <https://doi.org/10.25300/misq/2017/41.1.03>.
- Nambisan, S., Siegel, D., & Kenney, M. (2018). On open innovation, platforms, and entrepreneurship. *Strategic Entrepreneurship Journal*, 12(3), 354–368. <https://doi.org/10.1002/sej.1300>.

- Nononen, S., Storbacka, K., & Windahl, C. (2019). Capabilities for market-shaping: Triggering and facilitating increased value creation. *Journal of the Academy of Marketing Science*, 47(4), 617–639. <https://doi.org/10.1007/s11747-019-00643-z>.
- Netzer, O., Feldman, R., Goldenberg, J., & Fresko, M. (2012). Mine your own business: Market-structure surveillance through text mining. *Marketing Science*, 31(3), 521–543. <https://doi.org/10.1287/mksc.1120.0713>.
- Oh, Y.K., Yi, J. and Kim, J. (2023), "What enhances or worsens the user-generated metaverse experience? An application of BERTopic to Roblox user eWOM", *Internet Research*, Vol. ahead-of-print No. ahead-of-print. doi: 10.1108/INTR-03-2022-0178.
- Oishi, S., Kesebir, S., Miao, F. F., Talhelm, T., Endo, Y., Uchida, Y., Shibana, Y., & Norasakkunkit, V. (2013). Residential mobility increases motivation to expand social network: But why? *Journal of Experimental Social Psychology*, 49(2), 217–223. <https://doi.org/10.1016/j.jesp.2012.10.008>.
- Oreg, S., & Nov, O. (2008). Exploring motivations for contributing to open source initiatives: The roles of contribution context and personal values. *Computers in Human Behavior*, 24(5), 2055–2073. <https://doi.org/10.1016/j.chb.2007.09.007>.
- Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The development and psychometric properties of LIWC2015*. University of Texas.
- Pentina, I., Guilloux, V., & Micu, A. C. (2018). Exploring social media engagement behaviors in the context of luxury brands. *Journal of Advertising*, 47(1), 55–69. <https://doi.org/10.1080/00913367.2017.1405756>.
- Perreault, W. D., & Leigh, L. E. (1989). Reliability of nominal data based on qualitative judgments. *Journal of Marketing Research*, 26(2), 135–148. <https://doi.org/10.1177/002224378902600201>.
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of interactive marketing*, 18(3), 5–14.
- Ramaswamy, V., & Ozcan, K. (2016). Brand value co-creation in a digitalized world: An integrative framework and research implications. *International Journal of Research in Marketing*, 33(1), 93–106. <https://doi.org/10.1016/j.ijresmar.2015.07.001>.
- Roberts, D. L., Palmer, R., & Hughes, M. (2022). Innovating the product innovation process to enable co-creation. *R&D Management*, 52(3), 484–497. <https://doi.org/10.1111/radm.12492>.
- Rocklage, M. D., Rucker, D. D., & Nordgren, L. F. (2018). The evaluative Lexicon 2.0: The measurement of emotionality, extremity, and valence in language. *Behavior Research Methods*, 50(4), 1327–1344. <https://doi.org/10.3758/s13428-017-0975-6>.
- Rust, R. T., & Cooil, B. (1994). Reliability measures for qualitative data: Theory and implications. *Journal of Marketing Research*, 31(1), 1–14. <https://doi.org/10.1177/002224379403100101>.
- Rutz, O., Aravindakshan, A., & Rubel, O. (2019). Measuring and forecasting mobile game app engagement. *International Journal of Research in Marketing*, 36(2), 185–199.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066x.55.1.68>.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.
- Scaraboto, D., & Figueiredo, B. (2022). How consumer orchestration work creates value in the sharing economy. *Journal of Marketing*, 86(2), 29–47. <https://doi.org/10.1177/00222429211027777>.
- Schudey, A., Kasperovich, P., Ikram, A., & Panhans, D. (2023). June 9). Game Changer: Accelerating the Media Industry's Most Dynamic Sector. Boston Consulting Group. Retrieved from <https://www.bcg.com/publications/2023/drivers-of-global-gaming-industry-growth>.
- Singh, S. K., Marinova, D., & Singh, J. (2020). Business-to-business e-negotiations and influence tactics. *Journal of Marketing*, 84(2), 47–68. <https://doi.org/10.1177/0022242919899381>.
- Sundararajan, A. (2019). Commentary: The twilight of brand and consumerism? Digital trust, cultural meaning, and the quest for connection in the sharing economy. *Journal of Marketing*, 83(5), 32–35. <https://doi.org/10.1177/0022242919868965>.
- Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24–54. <https://doi.org/10.1177/0261927x09351676>.
- Untaylored. (2022, July 1). How Roblox makes money: The business and revenue model explained. Untaylored. Retrieved May 27, 2024, from <https://www.untaylored.com/post/how-roblox-makes-money-the-business-and-revenue-model-explained>.
- Vaast, E., Safadi, H., Lapointe, L., & Negoita, B. (2017). Social media affordances for connective action: An examination of microblogging use during the Gulf of Mexico oil spill. *MIS Quarterly*, 41(4), 1179–1205. <https://doi.org/10.25300/misq/2017/41.4.08>.
- Van Laer, T., Feiereisen, S., & Visconti, L. M. (2019). Storytelling in the digital era: A meta-analysis of relevant moderators of the narrative transportation effect. *Journal of Business Research*, 96, 135–146. <https://doi.org/10.1016/j.jbusres.2018.10.053>.
- van Doorn, J., Lemon, K. N., Mittal, V., Nass, S., Pick, D., Pirner, P., & Verhoef, P. C. (2010). Customer Engagement Behavior: Theoretical Foundations and Research Directions. *Journal of Service Research*, 13(3), 253–266. <https://doi.org/10.1177/1094670510375599>.
- Von Krogh, G., Haefliger, S., Spaeth, S., & Wallin, M. W. (2012). Carrots and rainbows: Motivation and social practice in open source software development. *MIS Quarterly*, 36(2), 649–676. <https://doi.org/10.2307/41703471>.
- West, J. (2020). Localized knowledge flows and asymmetric motivations in open innovation. *Journal of Innovation Economics & Management*, 32(2), 181–196. <https://doi.org/10.3917/jie.032.0181>.
- Yadav, M. S., & Pavlou, P. A. (2020). Technology-enabled interactions in digital environments: A conceptual foundation for current and future research. *Journal of the Academy of Marketing Science*, 48, 132–136.