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Understanding Roblox's business model and collaborative learning on participation in the decision-making process: implications for enhancing cooperative literacy

Irma Himmatul Aliyyah[a*], Basrowi[b], Akhmad Junaedi[c] and Syahyuti[c]

[a]*Universitas Mercu Buana, Indonesia*
[b]*Universitas Bina Bangsa, Indonesia*
[c]*National Research and Innovation Agency (BRIN), Indonesia*

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A B S T R A C T

This study examines the robust relationships between Roblox's business model, collaborative learning, participation in the decision-making process, and cooperative literacy within the Indonesian Roblox community. All hypotheses were substantiated, emphasizing the significance of understanding the business model, promoting collaborative learning, and encouraging active involvement in decision-making activities for fostering cooperative literacy among players. The research employed an exploratory research design with a quantitative approach. Sampling bias and self-reported data are acknowledged limitations, along with the cross-sectional design's inability to establish causality. To address these constraints, future research should employ longitudinal methods, diverse data collection approaches, and intervention studies. Cross-cultural research comparing the Indonesian Roblox community with other cultural contexts is also encouraged. Practical recommendations include integrating features that support collaborative learning and decision-making participation within the Roblox platform. Collaboration between educational institutions and Roblox to use the platform as an educational tool is suggested, offering students a unique opportunity to develop cooperative literacy skills. These findings offer valuable insights into cooperative literacy and community engagement within the Roblox ecosystem, providing a roadmap for its development. This research contributes to the platform's growth and success in Indonesia, making it a more cooperative and informed community.

1. Introduction

The advancement of information technology and the gaming industry has brought significant changes in the way people interact, play, and learn (Ahir et al., 2019). One platform that exemplifies this change is Roblox, an online gaming platform that allows users to create, play, and share games they have created themselves (Geffen, 2021). Roblox has become one of the largest online gaming ecosystems in the world, with millions of active players every day (Du et al., 2021; Hardy et al., 2022). However, what makes Roblox unique is its integrated business model with user participation. Within Roblox, players can buy and sell virtual items, create games, and participate in a vibrant virtual economy (Alpala et al., 2022; Mancuso et al., 2023). In this ecosystem, understanding Roblox's business model becomes crucial (Keegan et al., 2023). This understanding includes how Roblox generates revenue, how the virtual currency Robux operates, and how revenue is shared between game developers and the platform (Lee & Gu, 2022). In addition to understanding the business model, collaborative learning plays a key role in developing the understanding of Roblox community members (Nazar et al., 2019; Yoo et al., 2023). Through collaboration with other players and more experienced developers, community members can share knowledge, skills, and experiences (Freeman & McNeese, 2019). They can work together in game development, solve problems, and learn together.

* Corresponding author.
E-mail address: irma.himmatul@mercubuana.ac.id (I. H. Aliyyah)

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Both of these factors, understanding Roblox's business model and collaborative learning, have significant implications for participation in the decision-making process within the Roblox ecosystem (Dwivedi et al., 2023; Li et al., 2022). Understanding the business model allows players to more actively contribute to decisions that affect their income and their economy within the platform (Reinartz et al., 2019; Täuscher & Laudien, 2018). Collaborative learning allows them to understand how to collaborate and interact within a heterogeneous community (Cen et al., 2016; Duque et al., 2015; Järvelä et al., 2020).

The importance of participation in the decision-making process in the context of Roblox is also related to the concept of cooperative literacy (Wargo, 2021). Cooperative literacy involves understanding how cooperative members can participate in decisions that affect the cooperative or the platform (Chawviang & Kiattisin, 2022; Mannan & Pek, 2023). In other words, players who understand Roblox's business model and have engaged in collaborative learning can more actively and effectively participate in decision-making that affects the Roblox ecosystem (Kar & Varsha, 2023). Increased participation contributes to improving cooperative literacy, as players learn how their actions impact larger outcomes (Chen et al., 2020). In a broader context, understanding Roblox's business model and collaborative learning not only influences the Roblox ecosystem but also brings implications for understanding the concept of cooperatives and cooperative literacy (Khalil et al., 2023). Therefore, further research into this relationship can provide valuable insights into how education, training, and experience can affect participation and literacy in cooperatives within the rapidly evolving digital ecosystem.

The significance of this research is crucial in the context of the development of online gaming ecosystems such as Roblox. In an era where users actively participate in game creation, trading, and development, understanding the platform's business model and collaborative learning plays a vital role in enhancing cooperative literacy. It's not just about comprehending how the platform generates revenue, but also about how players can manage their economy intelligently and participate in decision-making that impacts the ecosystem. This research has implications for the development of more effective educational strategies within the Roblox context and can contribute to the growth of a strong virtual economy. The research aims to understand the influence of understanding the platform's business model and collaborative learning on player participation, as well as to identify the relationship with cooperative literacy, with the hope of providing a better understanding of how the development of online gaming ecosystems affects cooperative literacy and decision-making.

2. Literature Review and Hypothesis Development

2.1 Roblox's Business Model and Participation in the Decision-Making Process

According to Huang et al. (2023), Roblox's business model refers to how the Roblox platform generates revenue, interacts with game developers, and manages its internal economy. This includes various sources of income, such as the sale of virtual currency (Robux), in-game item trading, and revenue sharing with game developers. In this business model, players, developers, and the platform itself have unique roles and involvement in running the Roblox ecosystem (Wei, 2022). Livingstone & Pothong (2022) assert that Roblox's business model and participation in the decision-making process are closely intertwined. A better understanding of Roblox's business model enables players and developers to participate more effectively in the decision-making processes that impact the Roblox ecosystem (Friedmann, 2023). For example, decision-making related to the economic system, game rules, revenue sharing, or platform features requires a strong understanding of the business model (Kumar et al., 2018). Players who comprehend the business model can provide more relevant input, understand the consequences of decisions, and engage in community debates (Hoffman, 2016). This supports a more democratic and effective participation within the Roblox ecosystem (Hollensen et al., 2023). Thus, an understanding of Roblox's business model helps shape the participation of players and developers in decision-making, and conversely, strong participation in decision-making can influence a deeper understanding of the business model. They mutually reinforce each other, creating a more balanced and inclusive ecosystem within Roblox.

H_1: *Roblox's Business Model impacts on Participation in the Decision-Making Process.*

2.2 Roblox's Business Model and Cooperative Literacy

Tavella and Papadopoulos (2017) assess that cooperative literacy entails understanding how members of a cooperative or platform can engage in decision-making and navigate the ecosystem collaboratively. In the context of Roblox, the platform's business model significantly influences how players and developers cooperate and participate in shaping the environment (Mousavi et al., 2019). A profound understanding of Roblox's business model is crucial for cooperative literacy within the Roblox community (Wells et al., 2023). Muzellec et al. (2015) state that when players and developers have a strong grasp of how the business model operates, including how revenue is generated and distributed, they can more effectively participate in decisions that impact the platform. This includes contributing to discussions on economic systems, revenue sharing, governance policies, and more. In turn, cooperative literacy, which is the ability to collaborate, make informed decisions, and understand the implications of those decisions, can be enhanced by the knowledge of Roblox's business model (Maqsood & Chiasson, 2021). As cooperative members gain a deeper comprehension of how the platform's financial and operational aspects work, they are better equipped to engage in collaborative efforts, share resources, and collectively influence the platform's direction (Helberger et al., 2018). In summary, a solid grasp of Roblox's business model is instrumental in facilitating

cooperative literacy, as it equips participants with the knowledge necessary to actively contribute to and navigate the cooperative decision-making process within the Roblox ecosystem. This synergy creates a more informed, engaged, and cooperative community.

H_2: *Roblox's Business Model impacts on Cooperative Literacy.*

2.3 Collaborative Learning and Participation in the Decision-Making Process

Lee et al. (2017) defines that collaborative learning is an educational approach in which individuals work together in groups or teams to achieve a common learning goal. This approach encourages students to engage in active discussions, share knowledge, solve problems, and construct their understanding collectively. Bower et al. (2017) assert that collaborative learning can take place in various settings, including classrooms and online environments. The relationship between collaborative learning and participation in the decision-making process is of paramount importance (Cheng et al., 2021; Elbakidze et al., 2015). Collaborative learning experiences play a significant role in preparing individuals to participate effectively in decision-making contexts, whether within educational institutions, workplaces, or communities (Chan, 2012). Collaborative learning necessitates effective communication, including active listening, articulating ideas, and providing constructive feedback. These skills are vital for engaging in decision-making discussions and expressing one's viewpoint clearly (Chung et al., 2016). Collaborative learning often involves tackling complex tasks and solving problems as a group. These problem-solving experiences enhance participants' ability to analyze issues, propose solutions, and make informed decisions collaboratively (Hesse et al., 2015).

According to Hajhosseini et al. (2016), Collaborative learning encourages critical thinking as individuals evaluate various perspectives and evidence. This critical thinking ability is valuable when assessing options and making well-reasoned decisions. In collaborative learning, disagreements and conflicts may arise (Opdecam & Everaert, 2018). Learning how to manage conflicts and find consensus is a valuable skill for effective participation in decision-making processes, where differing opinions are common (Walters et al., 2015). Collaborative learning highlights the importance of teamwork and mutual support. This teamwork experience is directly transferable to participation in decision-making, where collective effort is often required (Lau et al., 2014). Overall, collaborative learning equips individuals with the competencies and mindset needed for active participation in the decision-making process (Sousa & Rocha, 2019). These skills, gained through collaborative learning, enable individuals to contribute constructively, engage in discussions, and cooperate effectively when making decisions within various contexts, be it educational, organizational, or community-related (Antonini et al., 2021).

H_3: Collaborative Learning impacts on Participation in the Decision-Making Process

2.4 Collaborative Learning and Cooperative Literacy

Karnes et al. (1997) assert that cooperative literacy encompasses the knowledge and skills needed for effective collaboration and participation within cooperative or group settings. Collaborative learning experiences help individuals develop and strengthen the competencies that are integral to cooperative literacy: Collaborative learning encourages learners to effectively communicate with their peers, articulate their thoughts, actively listen, and provide constructive feedback (Le et al., 2018). These communication skills are essential for productive collaboration, as well as for expressing one's ideas clearly within a cooperative context. In collaborative learning, participants are often required to work together as a team and rely on one another to achieve shared learning objectives. This experience fosters a sense of interdependence and teamwork, which is fundamental in cooperative literacy (Haugland et al., 2022).

Collaborative learning environments may involve disagreements or conflicts among participants. Learning how to manage conflicts and reach resolutions is a vital aspect of both collaborative learning and cooperative literacy (Herrera-Pavo, 2021). Collaborative learning often involves shared decision-making, where learners collectively decide on tasks, strategies, or project directions (Miller & Hadwin, 2015). This mirrors the cooperative decision-making processes that occur in various cooperative settings. In both collaborative learning and cooperative literacy, there is an emphasis on shared responsibility and accountability. Participants learn to take ownership of their contributions and shared outcomes (Richter et al., 2017). Collaborative learning experiences serve as a valuable training ground where individuals acquire the skills and attitudes necessary for effective cooperation, communication, and participation within cooperative structures (Fu & Hwang, 2018). In turn, cooperative literacy supports the application of these skills within cooperative environments, including cooperatives, community organizations, and collaborative work settings (Tregear & Cooper, 2016).

H_4: *Collaborative Learning impacts on Cooperative Literacy.*

2.5 Participation in the Decision-Making Process and Cooperative Literacy

Abelson et al. (2003) defines that participation in the decision-making process refers to the involvement of individuals or members within a group, organization, or community in the discussions, deliberations, and choices that influence policies,

actions, or outcomes. It often involves expressing opinions, sharing ideas, and contributing to the decision-making procedure, ultimately influencing the direction or results of a given context. Morschheuser et al. (2017) assert that cooperative literacy refers to the knowledge, skills, and competencies required to effectively engage in cooperative or collaborative activities, organizations, or endeavors. It encompasses the ability to work collectively, communicate and interact productively with others, participate in shared decision-making, resolve conflicts, and understand the principles of cooperation and collaboration. According to Jeong & Hmelo-Silver (2016), cooperative literacy is essential for individuals involved in cooperative businesses, community organizations, group projects, and other contexts where collaboration and mutual support are vital for success. It equips individuals with the tools to contribute constructively, make informed decisions, and foster a sense of community and shared responsibility within cooperative or group settings.

Cooperative literacy encompasses the knowledge, skills, and attitudes required to engage effectively and collaboratively within a cooperative or group setting (Kukulska-Hulme & Viberg, 2018). Participation in the decision-making process involves active communication, including expressing ideas, listening to others, and engaging in constructive dialogue (Raelin, 2012). These communication skills are a key component of cooperative literacy, as effective communication is essential for collaborating and making decisions collectively (Morley & Cashell, 2017). Decision-making processes often entail differing opinions or conflicts (Cartenì et al., 2022). Cooperative literacy includes the ability to manage conflicts constructively, find common ground, and reach consensus, which are essential skills for successful participation in decision-making within a cooperative environment (Falconi & Palmer, 2017). Both participation in the decision-making process and cooperative literacy emphasize the concept of shared decision-making (Halskov & Hansen, 2015). In cooperative settings, individuals work together to make decisions that affect the group or organization, and understanding how to do so is a crucial aspect of cooperative literacy.

H_5: *Participation in the Decision-Making Process impacts on Cooperative Literacy.*

2.6 Participation in the Decision-Making Process as mediator

Participation in the decision-making process can serve as a mediator in various contexts, particularly within organizations, communities, or collaborative settings. A mediator is an intermediary or facilitator that helps manage and resolve conflicts, as well as foster communication and understanding between parties. Participation in decision-making can mediate conflicts by providing a structured platform for individuals to discuss their differences, share perspectives, and negotiate solutions (Evers et al., 2016). Mediation within this process can help parties find common ground, make compromises, and reach mutually acceptable decisions. Decision-making participation encourages open communication (Land et al., 2017). A mediator ensures that all relevant information is shared, all voices are heard, and the communication process remains constructive. This fosters transparency and inclusivity in the decision-making process. Mediation can facilitate reaching consensus among participants. By guiding discussions and promoting collaborative problem-solving, a mediator can help participants arrive at decisions that reflect the collective will and interests of the group (Tang et al., 2020). Mediators can help ensure that all participants have access to necessary information and that relevant data is shared effectively. This ensures that decision-makers are well-informed and can make decisions based on a common understanding of the facts.

H_6: *Participation in the Decision-Making Process mediates the relationship between Roblox's Business Model and Cooperative Literacy.*
H_7: *Participation in the Decision-Making Process mediates the relationship between Collaborative Learning and Cooperative Literacy.*

3. Methodology

This research employs an exploratory research design to analyze and understand the relationships between key variables in the context of the Roblox ecosystem. The primary focus is on understanding Roblox's business model, collaborative learning, participation in decision-making, and cooperative literacy. A quantitative approach is adopted for data collection and analysis, involving an online survey filled out by Roblox players. The sample is selected using purposive sampling with the criteria of students aged between 18 and 25 years who actively engage in playing the game Roblox. The research comprises 240 respondents from various universities in the Province of Banten.

The utilization of an exploratory research design and purposive sampling approach is particularly valuable in this context as it allows the researchers to explore and establish initial insights into the intricate relationships between the variables of interest within a specific age range and Roblox player demographic. By collecting data from a targeted sample of 240 respondents from various universities, and employing statistical analysis through SmartPLS software, the study aims to uncover patterns and connections that may not have been previously identified. This approach lays the foundation for further research and hypothesis testing, ultimately contributing to a better understanding of the Roblox ecosystem among young adult players in the Province of Banten (Suseno & Basrowi, 2023).

In the data analysis process, the bootstrap technique is employed to test the statistical significance of relationships among the studied variables (Henderson, 2005), including understanding Roblox's business model, collaborative learning, participation

in decision-making, and cooperative literacy. The analysis results encompass path coefficients, coefficient of determination (R^2) values, and the assessment of model fit with specific fit indices (Hulland, 1999). Findings from this analysis will be interpreted to determine whether the research hypotheses are supported, and the implications of the findings will be discussed in the research report (Becker et al., 2016). Furthermore, the research sample is selected from the population of Roblox players and represents a group of respondents who have completed an online survey. The sample is chosen using simple random sampling methods to ensure sample representativeness (Núñez-Antón et al., 2020). Results from this sample will provide insights into Roblox's business model understanding, collaborative learning, participation in decision-making, and cooperative literacy among Roblox players in a general context (Suwarno et al., 2020).

In this research, precise measurement instruments have been developed to assess the four key variables within the Roblox ecosystem. The first variable, "Roblox's Business Model," is evaluated by survey questions measuring the depth of players' comprehension regarding Roblox's business model (Friedmann, 2023; Huang et al., 2023; Wei, 2022). Responses are collected through a Likert scale and categorical variables. The second variable, "Collaborative Learning," is assessed through questions that explore players' collaborative experiences on the platform, using a Likert scale to gauge the level of collaborative engagement (Karnes et al., 1997; Le et al., 2018; Miller & Hadwin, 2015). "Participation in Decision-Making," the third variable, is measured by questions that investigate players' involvement in the decision-making processes in the Roblox ecosystem, employing a Likert scale or suitable categories (Abelson et al., 2003; Morley & Cashell, 2017; Raelin, 2012). The final variable, "Cooperative Literacy," is evaluated through questions designed to determine players' understanding of cooperative concepts, using a Likert scale and relevant categorical variables (Jeong & Hmelo-Silver, 2016; Kukulska-Hulme & Viberg, 2018; Morschheuser et al., 2017). These meticulous measurement instruments ensure the precision and relevance of the collected data for subsequent analysis, providing a comprehensive view of players' experiences and perceptions within the Roblox environment (Hatzimanouil, 2023).

4. Results and Finding

4.1 Validity and reliability

In this data analysis, the focus is on four constructs of interest, namely "Roblox's Business Model," "Collaborative Learning," "Participation in Decision-Making," and "Cooperative Literacy." The measurement results indicate that each of these constructs exhibits very strong measurement quality. Outer Loading, which reflects the extent to which specific items are related to their corresponding constructs, signifies that all items within each construct have a robust relationship with their respective construct, as evidenced by the high Outer Loading values. Furthermore, the reliability of the measurement instruments used to assess each construct is exceptionally high, with values of Cronbach's Alpha, rho_A, and Composite Reliability (CR) exceeding 0.95. This demonstrates a high level of internal consistency in the measurements and implies that the items employed in these measurement instruments can be considered reliable indicators for assessing the respective constructs. Moreover, the Average Variance Extracted (AVE) provides insights into the extent to which the variance in each construct is explained by the relevant items. The results reveal that the majority of the variance in each construct can be accounted for by the pertinent items, with the AVE values also reflecting construct validity. Consequently, the data analysis consistently affirms that the measurement instruments used in this study are reliable and valid. These findings instill confidence that these measurement instruments can be trusted for assessing each of the constructs under investigation, and that the data obtained from these instruments can be used with confidence in further research or decision-making contexts (see Table 1 and Fig. 1).

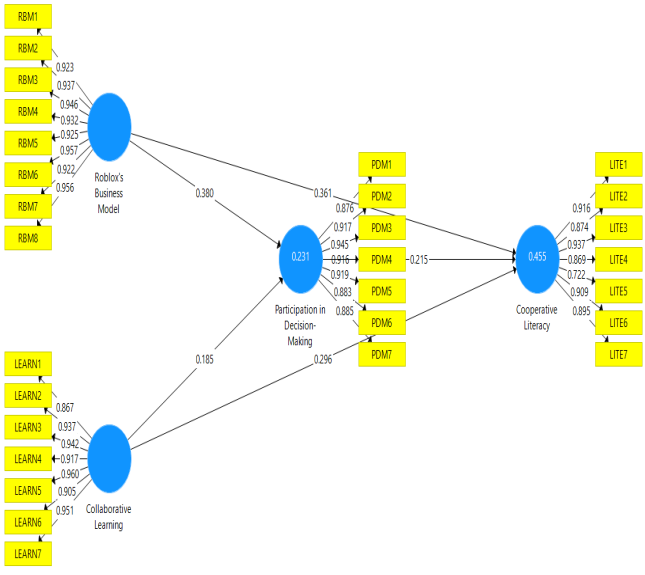

Fig. 1. PLS Algorithm

Table 1
Confirmatory factor analysis

Construct	Items	Outer Loading	Cronbach's Alpha	rho_A	CR	AVE
Roblox's Business Model	RBM1	0.923	0.980	0.981	0.983	0.879
	RBM2	0.937				
	RBM3	0.946				
	RBM4	0.932				
	RBM5	0.925				
	RBM6	0.957				
	RBM7	0.922				
	RBM8	0.956				
Collaborative Learning	LEARN1	0.867	0.972	0.978	0.977	0.857
	LEARN2	0.937				
	LEARN3	0.942				
	LEARN4	0.917				
	LEARN5	0.960				
	LEARN6	0.905				
	LEARN7	0.951				
Participation in Decision-Making	PDM1	0.876	0.964	0.966	0.97	0.821
	PDM2	0.917				
	PDM3	0.945				
	PDM4	0.916				
	PDM5	0.919				
	PDM6	0.883				
	PDM7	0.885				
Cooperative Literacy	LITE1	0.916	0.949	0.951	0.959	0.769
	LITE2	0.874				
	LITE3	0.937				
	LITE4	0.869				
	LITE5	0.722				
	LITE6	0.909				
	LITE7	0.895				

4.2 Hypothesis testing

The results of hypothesis testing connect various constructs in the study, namely Roblox's Business Model, Collaborative Learning, Participation in Decision-Making, and Cooperative Literacy. The analysis reveals that each of the hypotheses proposed in the study has been accepted. First, hypothesis H1, linking RBM to PDM, is accepted with a p-value of 0.000 and a T-statistics value of 5.597. This indicates that Roblox's Business Model significantly influences Participation in Decision-Making. Second, hypothesis H2, connecting Roblox's Business Model to Cooperative Literacy, is also accepted with a p-value of 0.000 and a T-statistics value of 6.059. This suggests that Roblox's Business Model significantly contributes to Cooperative Literacy. Next, hypothesis H3, associating Collaborative Learning with Participation in Decision-Making, is also accepted with a p-value of 0.001 and a T-statistics value of 3.402, indicating that Collaborative Learning positively affects Participation in Decision-Making. Furthermore, hypothesis H4, linking Collaborative Learning to Cooperative Literacy, is also accepted with a p-value of 0.000 and a T-statistics value of 5.576, confirming that Collaborative Learning has a positive impact on Cooperative Literacy. Finally, hypothesis H5, which connects Participation in Decision-Making to Cooperative Literacy, is also accepted with a p-value of 0.000 and a T-statistics value of 4.054, indicating that Participation in Decision-Making positively influences Cooperative Literacy. These findings illustrate that the constructs in this study are significantly interrelated as hypothesized. Therefore, these results strengthen our understanding of how each construct contributes to the others in the context of this research. (see Table 3).

Table 2
Direct relationship

Hypothesis	Construct*)	Original Sample	STDEV	T Statistics	P Values	Result
H1	RBM → PDM	0.380	0.068	5.597	0.000	Accepted
H2	RBM → LITE	0.361	0.060	6.059	0.000	Accepted
H3	LEARN → PDM	0.185	0.054	3.402	0.001	Accepted
H4	LEARN → LITE	0.296	0.053	5.576	0.000	Accepted
H5	PDM → LITE	0.215	0.053	4.054	0.000	Accepted

*) RBM=Roblox's Business Model; LEARN= Collaborative Learning; PDM=Participation in Decision-Making; LITE=Cooperative Literacy

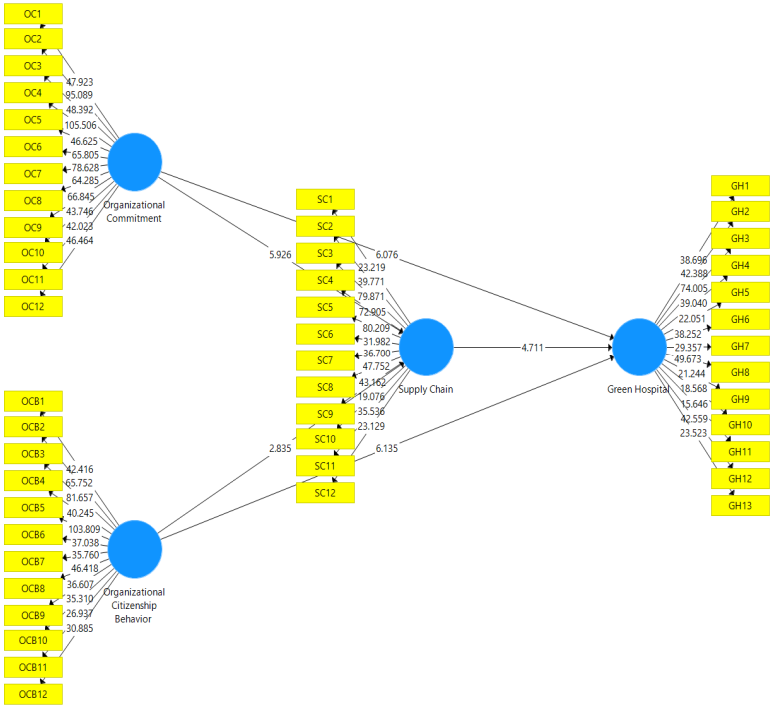

Fig. 2. Bootstrapping result

Table 3 presents the results of the analysis related to two additional hypotheses, H6 and H7, which involve more complex relationships among the previously mentioned constructs. Here is the analysis of the results of these two hypotheses:

Hypothesis H6 establishes a linkage from Roblox's Business Model to Participation in Decision-Making, which subsequently influences Cooperative Literacy. The analysis results indicate that H6 is accepted with a p-value of 0.001 and a T-statistics value of 3.38. This suggests that Participation in Decision-Making mediates the relationship between Roblox's Business Model and Cooperative Literacy, signifying that Roblox's Business Model significantly influences Participation in Decision-Making, and Participation in Decision-Making, in turn, has a positive impact on Cooperative Literacy. H6 garners strong support. Hypothesis H7 establishes a link from Collaborative Learning to Participation in Decision-Making, which then impacts Cooperative Literacy. The analysis results show that H7 is also accepted with a p-value of 0.019 and a T-statistics value of 2.355. Although the T-statistics value is slightly lower compared to the previous hypothesis, this still indicates that Participation in Decision-Making mediates the relationship between Collaborative Learning and Cooperative Literacy. This suggests that Collaborative Learning positively influences Participation in Decision-Making, which, in turn, contributes to the enhancement of Cooperative Literacy. H7 is also accepted.

These analysis results illustrate that the relationships between the constructs in the more complex model (H6 and H7) are also significant and align with the assumptions of the research. With the acceptance of these two hypotheses, we can observe how the influence of one construct continues through other constructs to ultimately impact the target construct, Cooperative Literacy. This provides deeper insights into the interactions among these constructs within the context of the research.

Table 3
Indirect relationship

Hypothesis	Construct*)	Original Sample	STDEV	T Statistics	P Values	Result
H6	RBM → PDM → LITE	0.082	0.024	3.38	0.001	Accepted
H7	LEARN → PDM → LITE	0.040	0.017	2.355	0.019	Accepted

*) RBM=Roblox's Business Model; LEARN= Collaborative Learning; PDM=Participation in Decision-Making; LITE=Cooperative Literacy

5. Discussion

Through a comprehensive analysis of the data and an examination of the robust relationships established in this study, all seven hypotheses (H1 to H7) have been substantiated, providing valuable insights into the dynamics of the Roblox ecosystem and its implications for cooperative literacy. The research findings not only affirm the significance of Roblox's business model, collaborative learning, and participation in decision-making but also underscore their potential contributions to promoting cooperative literacy among players. The study corroborates the influential role of Roblox's business model in shaping players' Participation in the Decision-Making. This finding aligns with prior research, which has highlighted the importance of understanding the business model in fostering active involvement in decision-making (Hoffman, 2016; Kumar et al., 2018; Wei,

2022). Roblox, as a global platform, can benefit from transparent communication regarding its business model, ensuring that players in Indonesia and elsewhere have the knowledge required for meaningful participation in the decision-making process, thus fostering greater cooperative literacy (Hidajat, 2023).

The research underscores that Roblox's Business Model significantly influences the development of Cooperative Literacy among players. While previous literature hinted at the importance of comprehending the business model in promoting cooperative engagement, this study strengthens the link (Helberger et al., 2018; Maqsood & Chiasson, 2021; Mousavi et al., 2019). The implications for Indonesia are particularly noteworthy, as they highlight the potential for enhancing cooperative literacy among players by emphasizing the business model within the Indonesian Roblox community. Then, the analysis confirms that Collaborative Learning significantly influences Participation in the Decision-Making Process among Roblox players. Collaborative learning experiences have long been recognized for their role in empowering users to participate actively in decision-making activities, which is particularly relevant for cooperative literacy. These findings advocate for the incorporation of collaborative learning features within Roblox, which could contribute to more substantial participation in the decision-making process and, consequently, the development of cooperative literacy (Rusmana et al., 2023).

The study reveals that Collaborative Learning significantly contributes to the development of Cooperative Literacy among players. This result expands our understanding of collaborative learning, emphasizing its impact on cooperative literacy within the context of Roblox. The practical implication is clear: by promoting collaborative learning experiences, Roblox can facilitate a deeper understanding of cooperative concepts, thus enhancing cooperative literacy among Indonesian players and fostering a more cooperative community. It is established that Participation in the Decision-Making Process has a substantial impact on the development of Cooperative Literacy among Roblox players. This finding aligns with prior research, suggesting that players who actively participate in decision-making processes gain a deeper understanding of cooperative principles (Chan, 2012; Chung et al., 2016). For Indonesia, this underscores the potential for enhancing cooperative literacy by encouraging player involvement in decision-making activities within the Roblox platform (Hatzimanouil, 2023).

The research demonstrates that Participation in the Decision-Making Process acts as a mediator in the relationship between Roblox's Business Model and Cooperative Literacy. This implies that players' participation in decision-making processes can bridge the gap between business model comprehension and cooperative literacy. For Indonesia, this highlights a practical strategy: by involving players in decision-making activities, Roblox can enhance the influence of business model comprehension on cooperative literacy, contributing to a more cooperative Indonesian Roblox community. The study reveals that Participation in the Decision-Making Process also acts as a mediator in the relationship between Collaborative Learning and Cooperative Literacy among Roblox players. This highlights the potential for Roblox to leverage the mediation of decision-making participation to enhance the impact of collaborative learning on cooperative literacy, particularly within the Indonesian context. The practical implication here is the promotion of player involvement in decision-making, which can lead to a more cooperative and literate Roblox community in Indonesia.

In summary, these findings carry significant implications for cooperative literacy and community engagement within the Roblox ecosystem in Indonesia. The emphasis on understanding the platform's business model, the promotion of collaborative learning, and the active involvement of players in decision-making processes can collectively contribute to the development of cooperative literacy among Indonesian players. By implementing these practical strategies, Roblox can foster a more cooperative and informed community, which is essential for its continued growth and success in Indonesia.

6. Conclusion

This research has provided valuable insights into the dynamics of the Roblox ecosystem and its implications for cooperative literacy, specifically within the Indonesian context. The study examined seven hypotheses, and the results affirmatively supported each one, highlighting the significance of Roblox's business model, collaborative learning, and active participation in the decision-making process in fostering cooperative literacy among players. The research's findings emphasize the importance of comprehending Roblox's business model, not only in promoting greater participation in the decision-making process but also in enhancing cooperative literacy. This understanding ensures that players in Indonesia are well-equipped to actively engage in decision-making activities within the Roblox community, ultimately contributing to cooperative literacy. Furthermore, the study underscores the pivotal role of collaborative learning in shaping players' participation in the decision-making process and developing cooperative literacy. The incorporation of collaborative learning features within Roblox can empower players to participate more actively in decision-making, fostering a deeper understanding of cooperative concepts.

Participation in the decision-making process emerges as a key factor in cooperative literacy development, with active involvement in decision-making activities facilitating a more profound understanding of cooperative principles. Encouraging player participation in decision-making processes within the Roblox platform has the potential to significantly enhance cooperative literacy among Indonesian players. Additionally, the research identifies the mediating role of participation in the decision-making process in the relationships between Roblox's business model and cooperative literacy, as well as between collaborative learning and cooperative literacy. Leveraging this mediation can enhance the impact of business model comprehension and collaborative learning on cooperative literacy within the Indonesian Roblox community.

The practical implications of these findings are crucial for Roblox's continued success in Indonesia. By focusing on enhancing business model understanding, promoting collaborative learning experiences, and encouraging player involvement in decision-making activities, Roblox can foster a more cooperative and informed community, contributing to the platform's growth and success in Indonesia. Cooperative literacy is a vital aspect of community engagement, and these findings offer a roadmap for its development within the Roblox ecosystem.

Limitations and recommendation

This research has shed light on the robust relationship between Roblox's business model, collaborative learning, participation in the decision-making process, and cooperative literacy within the Indonesian Roblox community. The study's findings, while insightful, come with certain limitations. Sampling bias and self-reported data may have influenced the results, and the cross-sectional design limits the ability to establish causality. Moreover, the generalizability of the findings beyond the Indonesian context should be considered with caution. To build upon this foundation, future research endeavors should adopt a longitudinal approach to provide a more comprehensive understanding of the causal relationships at play. Diverse data collection methods, including interviews and content analysis, can help mitigate sampling bias and provide a richer dataset. Additionally, intervention studies within the Roblox community may elucidate the effectiveness of strategies designed to enhance business model understanding, collaborative learning, and participation in decision-making, ultimately impacting cooperative literacy positively.

Cross-cultural research is another promising avenue to explore, comparing the Indonesian Roblox community with other cultural contexts. This could reveal valuable insights into the cultural nuances of cooperative literacy development within online gaming communities. Furthermore, practical recommendations for the Roblox platform include implementing features that promote collaborative learning and active participation in decision-making, thereby enriching the player experience. Educational institutions and Roblox can collaborate to integrate the platform as an educational tool, offering students a unique opportunity to develop cooperative literacy skills, which are essential for their future endeavors. These recommendations not only address the limitations of this study but also offer exciting possibilities for further research and practical applications, making the Roblox ecosystem an even more dynamic and cooperative space.

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Appendix

Table 1A

Measurement

Variable	Items and Indicators	Source
Roblox's Business Model	1. RBM1=I understand how Roblox generates revenue from its games and assets. 2. RBM2=I am aware of the different monetization strategies employed by Roblox. 3. RBM3=I can explain the profit-sharing model between Roblox and developers. 4. RBM4=I have knowledge of the virtual economy within Roblox, including the sale of virtual items. 5. RBM5=I am familiar with how Roblox incentivizes game developers through its business model. 6. RBM6=I can describe the ways in which Roblox generates income through its virtual currency, Robux. 7. RBM7=I comprehend the revenue-sharing mechanisms in place for creators and developers on Roblox. 8. RBM8=I have a good understanding of the economic structure and financial aspects of the Roblox platform.	(Friedmann, 2023; Huang et al., 2023; Wei, 2022)
Collaborative Learning	1. LEARN1=I frequently collaborate with other players in creating or developing content in Roblox. 2. LEARN 2=I have had positive collaborative experiences while working with other players in Roblox. 3. LEARN 3=I enjoy learning from and with other players in the Roblox community. 4. LEARN 4=Collaborative learning has enhanced my skills and knowledge in Roblox. 5. LEARN 5=I actively seek out opportunities to collaborate with others in Roblox. 6. LEARN 6=Collaboration with other players has enriched my overall Roblox experience. 7. LEARN 7=I believe that working together with other players leads to better outcomes in Roblox activities.	(Karnes et al., 1997; Le et al., 2018; Miller & Hadwin, 2015)
Participation in Decision-Making	1. PDM1=I feel that I have a say in the rules and policies implemented within Roblox. 2. PDM2=I actively participate in voting or elections related to Roblox games or features. 3. PDM3=I believe my opinions and suggestions are considered when decisions are made in the Roblox ecosystem. 4. PDM4=I am engaged in providing feedback or ideas to influence the direction of Roblox's development. 5. PDM5=I am confident that my actions can affect the decisions taken by the Roblox community. 6. PDM6=I am part of groups or communities that actively participate in shaping Roblox's policies and rules. 7. PDM7=I feel empowered to contribute to the decision-making processes in Roblox.	(Abelson et al., 2003; Morley & Cashell, 2017; Raelin, 2012)
Cooperative Literacy	1. LITE1=I understand how collective decisions are made within cooperative groups in Roblox. 2. LITE2=I can explain the benefits of cooperation and collaboration within the Roblox community. 3. LITE3=I actively participate in cooperative activities and events on Roblox. 4. LITE4=I am knowledgeable about the principles of teamwork and cooperation in Roblox games. 5. LITE5=I have a good grasp of how cooperation enhances the overall Roblox experience. 6. LITE6=I believe cooperation is essential for success in many Roblox activities. 7. LITE7=I am skilled at resolving conflicts and working harmoniously with others in Roblox.	(Jeong & Hmelo-Silver, 2016; Kukulska-Hulme & Viberg, 2018; Morschheuser et al., 2017)