

BEYOND THE COCKPIT: A COMPARATIVE ANALYSIS OF COMMUNITY ENGAGEMENT AND GROWTH MODELS IN THE MSFS ADDON ECOSYSTEM

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ABSTRACT: This research focuses on the influence that the community has on the development and operations of flight simulator add-on developers, with a focus on financial, developmental, and reputational sustainability. Using a case study design, applying qualitative research methods such as interviews, surveys, and archival data, the research analyzes two semi-structured interviews with representatives from freeware developers FlyByWire and Horizon Simulations, along with secondary data on payware developer iniBuilds. A user survey (N=147) was also conducted to gather community perspectives on developer engagement, transparency, motivation, and support behavior. The findings reveal that freeware and payware developers adopt unique engagement strategies that are shaped by their development models. FlyByWire emphasizes transparency, open-source collaboration, and community integration, while Horizon Simulations focuses on curated communication and grassroots visibility. IniBuilds, as a commercial developer, leverages professionalism and market presence. Despite their larger user base, they face greater scrutiny regarding feedback responsiveness. Across all cases, product quality, trust, and communication were identified as key drivers of user engagement. The study also applies five theoretical frameworks including donation-based crowdfunding, social exchange theory, theory of planned behavior, community motivation models, and participatory culture to explain developer–user dynamics in the add-on space. Practical implications are provided for emerging developers, alongside suggestions for future research into monetization models, hardware ecosystems, and shifting platform strategies.

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Declaration of Own Work: This thesis has been written and data collected by the author. Artificial Intelligence was used to help form the skeleton of the report and to transcribe interview recordings.

1 INTRODUCTION

1.1 Introduction to Third-Party Add-Ons in Microsoft Flight Simulator

Microsoft Flight Simulator (MSFS) stands as a hallmark in the realm of flight simulation, renowned for its unparalleled realism and attention to detail. Since its initial release in 1982, the simulator has evolved significantly, integrating advanced technology, state-of-the-art engines, and authentic visual systems that mimic real-world flight experiences. A key factor behind the lasting success of MSFS is its active community of enthusiasts, hobbyists and developers. Members of this community not only engage as users but also actively contribute by designing and coding add-ons themselves, either individually or in collaboration with others on platforms such as Discord and GitHub. As a result, community-based add-ons have emerged as a significant element in enhancing the overall simulation experience.

Community-based add-ons encompass a wide range of modifications that include both soft and hardware products. Examples of these are realistic aircraft, enhanced scenery, and custom tools that extend the functionality of the base simulator, such as ground services and radio communication plug-ins. These add-ons not only enrich the immersive experience but also cater to niche interests within the simulation community, such as those who enjoy passenger operations, cargo missions, or casual flying to enjoy natural scenery. The collaborative nature of this "ecosystem" has fostered a dynamic environment where ideas and innovations are continuously shared, allowing the simulator to evolve far beyond its original design.

The symbiotic relationship between Microsoft and Asobo, another development company that partnered with Microsoft on the last two Flight Simulator releases, and its community-based add-ons is rooted in mutual growth and innovation. On one hand, the openness of both Microsoft and Asobo encourages independent developers to experiment with the software development kits and push the boundaries of what is possible within the simulation framework. On the other hand, these contributions have significantly influenced the game's development trajectory, often prompting Microsoft to integrate popular community innovations into official updates or showcase community creations in the in-game Marketplace (Daan, 2022). This interdependency has not only sustained the simulator's popularity but has also led to an exponential increase in its user base (Microsoft, 2022).

Furthermore, the proliferation of online platforms such as forums, Discord servers, and social media has empowered developers to collaborate, share expertise, and directly engage with consumers or end-users. This digital landscape continues to shape the evolution of flight simulation, highlighting the transformative impact of community-based innovation on Microsoft Flight Simulator. This dynamic integration fosters continuous innovation and remarkably

paves the way for further future advancements in flight simulation.

1.2 Community Involvement in Third-Party Add-Ons

Over the past few decades, the evolution of Microsoft Flight Simulator has been deeply intertwined with its community of enthusiasts and developers. Initially, the simulator was a closed system driven by in-house development. However, as the community grew, independent developers began creating their own add-ons, adding layers of realism and functionality that far exceeded the original scope. These community-driven contributions not only enriched the gameplay experience but also established a dynamic ecosystem where innovation was collaboratively nurtured. It is important to understand what the flight simulator community is. This community does not only involve users of the products, but the entire ecosystem that these developers work in. The game platform hosted by Microsoft and Asobo, content creators, other developers, and aviation professionals are all involved and closely interested in the operations and conduct of these development teams

A key turning point in this evolution was the recognition by Microsoft and Asobo Studio of the vital role played by community engagement. As independent developers continued to push boundaries with realistic aircraft, detailed sceneries, and innovative tools, the official development teams began to incorporate popular community innovations into subsequent updates. This open approach allowed the simulator to remain relevant and adaptive, as the community was given a platform to shape the game's future. Over time, this integration evolved into a model of mutual growth where official updates and community add-ons continually inform and enhance one another.

In recent years, strategies reminiscent of reward-based crowdfunding (RBC) have emerged as pivotal in sustaining and accelerating this growth. It is important to clarify, however, that traditional crowdfunding—as defined by a set funding goal for a specific project—is not typically employed in this context. Instead, developers rely on a flexible, ongoing model of community support and funding, collecting contributions continuously to finance general development efforts. It is also important to note that funding is not the primary goal of these community campaigns, as these developers can also rely on word-of-mouth support, volunteering, and social media representation from the community as well. As a result, this method of sustaining growth through community engagement cannot be defined explicitly as RBC, but as community-supported development (Almansoury, 2022) or donation-based crowdfunding (Behl, 2023). By leveraging deep community engagement, developers tap into the collective interest and financial backing of enthusiasts who are passionate about the simulation experience. They often offer incentives such as exclusive content, beta access, and public recognition in exchange for contributions, thereby reinforcing the bond between the developer and their community.

The engagement strategies behind this community-based funding model are multifaceted. Developers utilize online platforms—forums, Discord servers, social media, and dedicated crowdfunding sites—to share project updates, gather direct feedback, and maintain transparency regarding progress and challenges. This digital ecosystem functions both as a marketing tool and as a support network, fostering recurring financial and emotional investment. The continued success of developers such as iniBuilds, Horizon Simulations, Fenix Simulations, and FlyByWire underscores how this flexible funding approach, rooted in community engagement, has enabled them to evolve from small independent projects into market leaders in the flight simulation environment.

1.3 Research Problem and Guiding Questions

The core research question guiding this study is: *How do flight simulator developers leverage community engagement to secure funding and sustain long-term developmental, community, and financial growth?* In addressing this question, several interrelated research problems have been identified, each shedding light on a distinct facet of how community engagement influences funding and development trajectories in the flight simulation industry. This research offers a holistic view of how both developers and consumers are involved in the shared-growth of these development teams.

One of the more intriguing areas to study are how different types of developers, namely those who produce paid add-ons such as iniBuilds vs those who develop freeware add-ons such as FlyByWire, utilize their communities to help support their business models. This raises the first guiding question: *“How do freeware and payware flight simulator developers differ in how they engage with their communities to support their respective development and funding models?”*. This question can be explored through the different strategies these two business models use in trying to maintain strong community support for their projects, such as various incentive options, subscription services, and community input, and what challenges can arise from these strategies.

While these developers can differ in how they utilize their community, the users themselves also have different experiences and preferences in how they engage with various developers depending on what it is they want to see in the simulators. This raises the second guiding question: *“How do flight simulator users decide which developers or projects to support, and what factors shape their engagement behavior?”*. This focuses on what motivates them to show support for various projects, whether through financial means or through expertise. It also analyzes how different factors such as transparency, incentives, pricing models, and timeline adherence vary in importance to users.

Together, these guiding questions comprehensively address the main research question, providing a multidimensional framework to explore how flight simulator developers

harness community engagement for funding and long-term growth

1.4 Report Layout

Following the introduction and background, Chapter 2 presents the theoretical framework, outlining key concepts that touch on some crowdfunding models, community motivation, and co-creation. Rather than being directly analyzed in the results, these theories are reflected upon in Chapter 5, where they are connected back to the findings for broader conceptual insight. Chapter 3 details the qualitative methodology used, which includes interviews with development teams and a survey distributed to the users of these developers, along with the rationale behind the research design. Chapter 4 presents the findings in two main sections; the interview results and survey analysis, both organized thematically across developer and stakeholder types. Finally, Chapter 5 answers the research questions, discusses practical and theoretical implications, outlines limitations, and proposes directions for future research.

2 THEORETICAL FRAMEWORK

2.1 Introduction to Theoretical Framework

This chapter introduces the key theoretical concepts that inform the analysis of how flight simulator developers engage with their communities to sustain growth, gather support, and maintain user engagement. Given the study’s dual focus on both developers and users, the theoretical framework includes models that address funding mechanisms, reciprocal engagement dynamics, collaborative development, and user motivations. These theories help contextualize the varied relationships between developers and their communities—whether through financial support, co-creation, or informal engagement.

The concepts discussed below are used to interpret both developer strategies and user perspectives. These frameworks support a multidimensional understanding of the Microsoft Flight Simulator add-on development ecosystem and inform the interpretation of qualitative patterns that emerge from the collected data. They help guide answering the research question by examining the various ways in which developers and users connect over a project, and the motivations of users to continually support projects both financially and through direct involvement in development.

2.2 Donation Based Crowdfunding (DBC) (Behl, 2023) (Chen, 2019)

Donation-Based Crowdfunding (DBC) refers to a funding model in which supporters voluntarily contribute money to a project or cause without expecting any material return or ownership in exchange. Unlike reward-based crowdfunding (which is centered around specific projects, pre-set funding goals, and tiered reward systems), donation-based crowdfunding is often open-ended, flexible, and relational—focusing more on long-term support and shared interest than transactional reward.

As noted in the introduction chapter, the community funding practices of most flight simulator developers do not neatly fit within the traditional definitions of crowdfunding. While elements of reward-based crowdfunding do exist (such as early access or exclusive content), the funding model used by teams such as FlyByWire and Horizon Simulations is closer to donation-based crowdfunding. These developers often rely on recurring, voluntary donations, community goodwill, and continued emotional investment to support long-term development—without offering specific “products” in return.

In this study, donation-based crowdfunding provides a theoretical lens through which to understand the financial and personal sustainability of freeware projects. It also highlights the importance of community trust, transparency, and shared passion as non-monetary drivers of continued support (*Loureiro, 2021*). This is particularly relevant when comparing developers with structured, commercial payware models (e.g., iniBuilds) to more informal, community-supported freeware collectives (e.g., Horizon Simulations, FlyByWire).

2.3 Social Exchange Theory (*Schmitt, 2021*)

Social Exchange Theory (SET) posits that human interactions are shaped by the exchange of resources—whether tangible (money, services) or intangible (recognition, trust, or belonging). Individuals participate in relationships where they perceive the benefits to outweigh the costs, and this reciprocal logic applies to both personal and organizational interactions. People with a deeper connection or involvement with a project will inherently value intangible exchanges over tangible ones.

SET is a theory that is widely observed in the gaming world. A study conducted by Howe and Sun Kyong describes the social exchanges gaming communities (in this case an Xbox gaming clan) engage in, where longer-standing and core users are usually more involved and connected to the games they play (*Howe, 2018*).

In the context of this study, SET is instrumental in understanding the developer–user relationship. Users may contribute financially, test early builds, or provide feedback—not necessarily because they expect compensation, but because they receive other forms of value: community belonging, insider access, or the feeling of being part of something meaningful. Developers, in turn, may recognize contributors through beta access, public shoutouts, or direct engagement, which reinforces the cycle of support.

This theory helps interpret the incentives and reciprocal dynamics that underpin ongoing community engagement, especially for freeware projects where financial reward is not guaranteed. It also provides insight into the social motivations behind sustained involvement from users who see their contributions as part of a mutually beneficial, non-financial exchange. Developers can better understand

what kinds of exchanges their users value more and as a result increase the value and success of their projects.

2.4 Co-Creation and the Participation Theory (*Jenkins, 2006*)

The concept of participatory culture, introduced by Henry Jenkins (2006), describes the shift from passive consumption to active participation in digital communities. In such cultures, users do not simply consume content, they actively shape, remix, and contribute to its production. Closely linked to this is the idea of co-creation, where creators and users collaborate in the design, development, and evolution of a product.

This framework is especially relevant for the Microsoft Flight Simulator community, where users are not just customers—they are co-developers, testers, marketers, and advocates. Teams such as FlyByWire are excellent examples of participatory culture in practice: their aircraft projects are developed openly on GitHub, with public access to code, roadmaps, and contribution portals. Even smaller teams such as Horizon Simulations benefit from user involvement in marketing and feedback.

By using this theory, the study can analyze the collaborative dynamics of development teams and explore how community involvement influences feature decisions, development cycles, and overall project identity. It also highlights how developers balance control and organization with openness and collaboration in their engagement strategies with users, content creators, and other developers as well.

2.5 Theory of Planned Behavior (*Ajzen, 1991*)

The Theory of Planned Behavior (TPB) suggests that an individual’s intention to perform a behavior is influenced by three core factors: their attitude toward the behavior, the subjective norms surrounding it, and their perceived behavioral control over the outcome. This framework is useful in examining user decision-making—particularly when it comes to engaging with, contributing to, or financially supporting add-on developers.

In this study, TPB helps explain why some users choose to support certain developers over others. For example, if a user believes that contributing to a freeware project is valuable (attitude), sees others in the community doing the same (subjective norm), and feels that their action will have an impact (perceived control), they are more likely to engage meaningfully. This is particularly relevant for understanding how transparency, trust, and perceived developer professionalism influence support behaviors across both freeware and payware ecosystems.

2.6 Community Motivation Models

2.6.1 Uses and Gratification Theory (*Ruggiero, 2000*)¹

Uses and Gratifications Theory (UGT) suggests that individuals actively choose to engage with media or platforms based on the satisfaction of certain needs—such as entertainment, social connection, self-expression, or information. In this case, users may support add-on developers because doing so brings personal gratification; being part of a respected project, influencing a product they love, or aligning with developers who reflect their values.

2.6.2 Communities of Practice (Wenger, 2011)

Communities of Practice (CoP) adds another dimension by framing these communities not just as audiences and consumers, but as collectives with shared goals and expertise. In CoPs, members build knowledge together through participation, discussion, and problem-solving—echoing how many simulation communities operate, especially in open-source contexts. This can be seen in the collaborations between various flight simulator developers such as Headwind and Horizon sharing a singular installer or freeware aircraft developers using the FBW flight systems.

3 METHODOLOGY AND RESEARCH DESIGN

3.1 Introduction to Research Design

The research aims to capture both the developer and user perspectives on engagement strategies, funding models, and the overall dynamics of community-driven development within the flight simulation ecosystem. This chapter outlines the research design and methodology used to investigate how flight simulator add-on developers leverage community engagement to support their development processes and sustain long-term growth. Given the exploratory nature of the study and its emphasis on understanding perspectives, behaviors, and relationships, a primarily qualitative research approach has been adopted. These types of studies are beneficial in understanding the “whys” of situations, providing more in-depth information on reasoning and motivations of subjects as to how they come to certain conclusions (Acumen, 2025).

To accomplish this, the study will use two primary data collection methods; in-depth interviews with add-on developers and descriptive surveys to the users and consumers of these developers.

The first method involves semi-structured interviews with members of various add-on development teams, each representing a different position within the industry. These case studies provide a wider spectrum of developer experiences across different scales and funding models, offering a comparative lens through which to examine community interaction.

The second method consists of surveys distributed to the communities of these developers. The purpose of these surveys is to gather insights into user experiences, preferences, and perceptions of engagement with add-on developers. The survey results will complement the

interviews by providing a broader, user-centric perspective on how community members interact with and support these projects.

3.2 Research Philosophy and Approach

This research is guided by an interpretivist philosophical perspective, which emphasizes the importance of understanding the subjective experiences and meanings that individuals assign to social phenomena (Dudovskiy, 2025). Given the focus of this study on developer and user perspectives within the flight simulation community, interpretivism provides a suitable lens through which to explore how community engagement is experienced, managed, and leveraged in real-world add-on development contexts.

The study adopts a deductive reasoning approach, whereby the analysis is guided by existing theoretical frameworks and concepts identified in the literature. Rather than building theory from the ground up, this approach involves applying established models—such as donation-based crowdfunding, social exchange theory, co-creation, and behavioral motivation theories—to interpret and evaluate the data collected from interviews and surveys (Pearse, 2019). This allows for a more structured examination of how flight simulator developers and users engage with one another, and whether their experiences align with or diverge from the expectations set by these theories.

The research is also inherently exploratory in nature. It does not aim to test hypotheses, but instead to uncover how developers and community members perceive and enact engagement strategies, and how these strategies contribute to the sustained growth of third-party add-on projects. The combination of developer interviews and community surveys allows for a comprehensive exploration of both sides of this engagement, contributing to a deeper understanding of a complex, co-creative ecosystem.

3.3 Research Strategy

To address the research question and its sub-components, this study adopts a multiple holistic case study strategy, known as a type 3 case study (Gray, 2014) which allows for the in-depth exploration of different add-on development teams within the flight simulation ecosystem. The use of multiple cases enables a comparative analysis of varying development and community engagement models, helping to identify both shared patterns and unique practices without being constrained by a predetermined hypothesis, as opposed to a single or embedded case-study approach (Bass, 2018). This approach will help create a

Each case represents a distinct type of developer with different approaches to community involvement, funding, and long-term project sustainability. Developers were not only selected due to their varying business models, but also as they are viewed as the most successful developers in their respective brackets. As mentioned previously, the three selected cases are iniBuilds, a major player in the payware market known for high-fidelity, commercially

licensed aircraft and scenery addons, based in the UK and Dubai. Some of their known projects include a high fidelity Airbus A350, and detailed airport models such as London Heathrow and Dubai DXB. Their partnership with Microsoft and other professional entities positions them as a corporate-aligned developer with a structured business model. Their primary workforce consists of employees and developers hired by their management, but also involve independent community members in testing and research as well. FlyByWire Simulations, a large-scale freeware development team whose open-source model and community-inclusive approach to development have earned them one of the most active user bases in the space, is another type of developer studied in this research. They are known primarily for their Airbus A320 NEO and A380 aircraft. They represent a decentralized, collaborative development model, where users can apply to join the team and use their expertise in flight model knowledge, graphical design and modelling, back-end software development, and networking with people in the aviation industry to help build a high fidelity and realistic product whilst remaining free to use. Finally, there is Horizon Simulations, a smaller freeware team with a fixed core of developers. They are mostly known for their Boeing 787 family, and Hues, their aircraft livery developer. Unlike FlyByWire, their model is less community-driven in terms of development but highly reliant on community support for visibility and reputation through word-of-mouth and informal marketing. They utilize connections and support from social media influencers such as YouTubers and streamers who use flight simulators in order to showcase their products, and also depend on their user-base to recommend their products to others.

This selection ensures variation across scale, funding model, and the role of community involvement, enabling a broader understanding of how different developer types leverage their communities for development and sustainability. It also reflects the diversity of approaches present in the Microsoft Flight Simulator addon ecosystem, from professionalized payware operations to passion-driven freeware collectives.

The case study strategy aligns well with the interpretivist and exploratory nature of the research, as it allows for rich, contextualized insights to emerge from each case. It also supports methodological triangulation by integrating developer interviews with community surveys, providing a more complete view of the interactive dynamics between developers and their user bases.

3.4 Methods of Data Collection

To gain a comprehensive understanding of the role of community engagement in flight simulator addon development, this study employs two complementary methods of data collection: in-depth interviews with development teams and online surveys targeted at their respective user communities. This combination allows for the collection of both deep, qualitative insights and broader community-driven perspectives.

3.4.1 In-Depth Interviews

In-depth, semi-structured interviews form the primary method of data collection for developer perspectives. These interviews were designed to explore how different types of developers engage with their communities, structure their funding models, and maintain long-term project growth and relevance. The interviews are also essential in addressing the first and third sub-questions of this research, which focus on developer strategies and the distinctions between freeware and payware models.

Each interview follows a semi-structured format guided by themes related to the core research question: *“How do flight simulator developers leverage community engagement to secure funding and sustain long-term developmental, community, and financial growth?”* and the supporting sub-question: *“How do freeware and payware flight simulator developers differ in how they engage with their communities to support their respective development and funding models?”*. These interviews will explore the engagement strategies of the developers with the various players in the add-on ecosystem. It will mainly focus on end user engagement, but will also explore the interactions with other developers, Microsoft as a platform host, and flight simulation content creators. This is done to gain a holistic view of how the different developers interact with all members of the ecosystem and how each element has impacted their growth and sustained success. The questions asked in the survey are designed to make the interviewee respond to how the discussed theories are relevant to their operations. Donation-based crowdfunding is discussed by asking the developers how and why they acquire funding from users and how they strategies to keep the trust intact. The relevance of social-exchange and communities of practice are also inquired by asking the interviewees how they view the significance of direct user involvement in the success of their projects

It is important to note that iniBuilds were not able to participate in the interviewing process. They were repeatedly contacted and had shown initial interest, but their lack of participation was due to their busy summer schedule and lack of available team members. To accommodate this lack of primary data, various articles, webpages, and blog posts will be used to address the interview themes.

3.4.2 Community Survey

To complement the developer interviews, this study also incorporates a survey aimed at the user communities of the three selected development teams. The goal of this survey is to gather a broader view of user experiences, preferences, and motivations in engaging with flight simulator addon projects. This method supports the second sub-question of the study, *“How do flight simulator users decide which developers or projects to support, and what factors shape their engagement behavior?”* which focuses on user behavior, expectations, and the factors that shape engagement with developers.

A survey created with Microsoft Forms was distributed online through public channels used by each developer

team, including Discord servers, forums, and social media platforms. The survey consisted of a mix of 58 closed-ended and open-ended questions, with the aim of addressing some of the theories discussed in the previous chapter. The questions were divided into sections, where each developer was asked about individually. Users were only required to answer one block per survey, which resulted in around 10-15 questions per response. The survey asked questions related to social exchange theory and uses and gratification theory by asking users about their motivations for choosing to support and user products from the developers. The theory of planned behavior and participation were also discussed by inquiring as to why users of the freeware developers chose to involve themselves in the development of the products they use. Donation-based crowdfunding was also touched upon by analyzing the motivations and reasons behind the financial contributions of users towards the projects of these developers.

The combination of interviews and surveys ensures a more holistic view of the community-developer relationship. While the interviews provide deep insights from the developer side, the surveys give voice to the broader community and enable cross-case comparisons of how engagement strategies are received and perceived.

3.5 Sampling Strategy

This study employs a purposeful sampling strategy for both interviews and surveys, ensuring that participants are selected based on their relevance to the research objectives (*suri, 2011*). The aim is not to achieve statistical generalization, but rather to gather rich, meaningful insights from individuals who are directly involved in add-on development or active within flight simulator communities.

3.5.1 Interview Sampling

For the in-depth interviews, purposive sampling is used to identify key individuals from three add-on development teams that represent a range of funding models, development structures, and community engagement styles. These participants are selected based on their active role in either managing, coordinating, or directly contributing to add-on development projects within their respective teams.

Participants are approached through official communication channels such as team websites, Discord servers, or direct email contact. While each team varies in scale and structure, the criteria for selection remain consistent. They must be a core developer or project lead, must be familiar with the team's approach to community engagement and project management, and must be able to speak on the team's funding model (freeware or payware)

The intended sample size is one to two individuals per development team, depending on availability and willingness to participate. This allows for cross-case comparisons while remaining feasible given the scope and timeframe of the thesis project.

These interviews were conducted with a representative of FlyByWire and the co-founder of Horizon Simulations, alongside a co-founder from Hues by Horizon—a livery design group affiliated with the Horizon team.

3.5.2 Survey Sampling

The community survey uses a convenience sampling approach, targeting users who are already active in the communities of the three selected development teams (*Nikolopoulou, 2023*). The survey is distributed via platforms commonly used by these communities, including Discord servers, online forums (such as AVSIM or Flightsim.to comment threads), and social media groups. Participants are invited to take part voluntarily, with no restrictions other than being users of Microsoft Flight Simulator and familiar with at least one of the featured developer teams.

To ensure a diverse range of perspectives, the survey will aim to capture responses from users who engage with both freeware and payware products, have participated in community development feedback, or testing, and possess varying levels of engagement (e.g., casual flyers, active testers, donors/supporters)

The target response rate was set to 50-100 respondents, with a total of 140 respondents eventually participating in the survey. This allowed for even more insight and accurate data on the perception and sentiments of the end user base on the various developers.

3.6 Data Analysis

This study employs a qualitative data analysis approach, using thematic analysis as the primary method for interpreting both interview transcripts and open-ended survey responses. The goal is to identify patterns, relationships, and insights that align with the research questions and sub-questions.

3.6.1 Interview Analysis

The in-depth interviews were recorded (with participant consent), transcribed, and analyzed using thematic analysis, following the six-phase process proposed by Braun and Clarke (2006). Interviews were transcribed using AI tool tl;dv and Microsoft Teams, who automatically transcribed the interviews as they were taking place. The theme extraction was done manually by first creating a general synopsis of the survey in the order the questions were asked. This was done by manually writing down notes and summarizing long answers by listening to the recordings and reading through the transcript. The synopsis was then sorted into thematic categories that were introduced in chapter 3. Themes were drawn both deductively (based on the interview guide and research sub-questions) and inductively (emerging organically from the data), ensuring flexibility while remaining grounded in the research framework. This approach was preferred over using AI coding tools such as Atlas.ti as the generated transcripts were sometimes found to be inaccurate in their translations and content, and the audio quality was not adequate enough for the AI to

properly identify and sort the speech. The small sample size also made it simpler to directly sort the interview synopsis by hand. As a result, it was much more effective to manually listen to the audio recordings and amend the transcript in tandem.

3.6.2 Survey Analysis

The survey included both closed- and open-ended questions. Each type was analyzed using appropriate tools and methods. Closed-ended questions (i.e., Rankings or multiple choice) were analyzed using Microsoft Forms and its variety of data visualization and categorization options when using their platform to create and conduct surveys. Open-ended responses underwent a thematic analysis similar to the interview data, which used manual sentiment analysis and categorization on Google Sheets. This qualitative layer of analysis enables the identification of common sentiments, expectations, and behaviors among community members.

By combining structured developer interviews with broader survey responses, this analysis strategy aims to create a rich and multi-perspective understanding of how engagement, funding, and community dynamics differ across the flight simulation add-on ecosystem.

3.7 Ethical Considerations

Ethical integrity is a central component of this research, particularly given the study's focus on human participants and community engagement. Both data collection methods—interviews and surveys—involve interactions with individuals, necessitating careful attention to informed consent, privacy, and responsible data management. All participants will be provided with a clear and concise explanation of the research purpose, their role in the study, and how their data will be used. For interviews, this will be delivered in the form of a participant information sheet and a digital or written consent form. Survey participants will be shown an introductory statement outlining the purpose of the study and confirming that participation is voluntary and anonymous. Proceeding with the survey will constitute consent. Participation in both interviews and surveys is entirely voluntary. Interview participants will be informed that they can decline to answer specific questions or withdraw from the study at any time without any consequences. Survey respondents may exit the questionnaire at any point before submission, and no identifying information will be collected. Interview participants will be anonymized in all transcripts and written materials unless they explicitly consent to being identified (i.e., if a developer prefers to speak publicly about their project). Any identifying details will be removed or replaced with generic descriptors, except for the name of the developer group the respondent is working for (i.e., “Developer A from FlyByWire”). Survey responses will be collected anonymously, with no names, usernames, or IP addresses linked to the data. The data collected will be used solely for academic purposes related to this thesis and may be presented in research presentations or publications with appropriate ethical

safeguards. Participants will not be quoted without their consent, and all findings will be presented in a manner that protects participant identity and privacy. Should the study require ethical clearance from the university, the appropriate application will be submitted.

4 RESULTS

This chapter will focus on analyzing and interpreting the results of both the interviews and the survey responses. The analyses will focus on what the data means in the context of each question or area of exploration, while the links to the theories and other practical implications will be discussed in more depth in chapter 5.

4.1 Developer Interviews

These interviews were conducted to help answer the first sub-question, “*How do freeware and payware flight simulator developers differ in how they engage with their communities to support their respective development and funding models?*” Each interview followed a semi-structured format and lasted approximately 45 minutes to one hour, focusing on five key thematic areas: team foundation, interaction with end users, engagement with content creators, collaboration with other developers, and relationship with Microsoft/Asobo as the platform hosts. The 5 key themes that were focused on during the interviews correlated with the most important actors in each developer’s immediate ecosystem, that included themselves (why they began their projects), the end users, influencers and content creators, other developers, and the platform hosts Microsoft and Asobo.

To compensate for the lack of primary data from iniBuilds, insights were gathered from publicly available sources, including their company website, news articles, and blog posts (Daan, 2022) (iniBuilds, 2025). These materials were analyzed thematically to ensure consistency with the interviews conducted. For the sake of the flow of the report, the reader should take into account that all results will originate from these two articles, with an addition of assumptions based on the data provided, which in some cases is incomplete. This is due to a lack of deep and profound public data.

4.1.1 Foundation - Appendix 1.2

A shared theme among all three development groups was a deep-rooted passion for aviation and a desire to enhance the relatively limited features of the base Microsoft Flight Simulator. Each team’s foundation story reflects both technical ambition and a sense of user-driven initiative to improve the flight simulation experience for all users.

Horizon Simulations began in 2022 with three independent flight simulator enthusiasts collaborating privately. Their first project was an improvement mod for LatinVFR’s A321 NEO, which laid the groundwork for their future development efforts with the Boeing 787-9. Horizon was initially cautious about working with other developers, citing concerns over potential leaks and piracy, and

preferred to remain independent in their early stages in order to establish stronger internal communication first. This is seen in the quote *"...we also didn't make the discord server public immediately, which was a conscious choice on our end. Because first, we wanted to make sure that we actually do have communication going in between ourselves...to make sure that our community is more protected against, you know, against piracy..."*

Hues by Horizon, focused on livery design, was established by a long-time painter in the flight sim space who wanted to create a central platform for under-recognized livery creators. Their motivation stemmed from both creative expression and a desire to improve visibility for other livery creators. *"...my aircraft development was more focused on the art side...worked with me and two other guys...and it kind of just expanded from there and we now, you know, are making connections with lots of other developers..."*

FlyByWire's representative noted they initially joined as an end user impressed with the quality of the early FBW mods. Their involvement began as a volunteer in documentation and later evolved into a permanent role, a choice driven by the project's open-source nature and collaborative culture. FBW's structure enables contributors from a wide range of technical and non-technical backgrounds to join the team, reflecting its inclusive, community-centered philosophy of add-on development. *"I think the best answer to that question is a belief in the product. And for my background, which I don't use extensively, but I am a graduate of marketing and advertising. And so being able to the word that comes to mind is flex. Being able to flex that experience into a unique industry was a fun opportunity and I think it's paid back in dividends. You know, I do love aviation."*

iniBuilds, by contrast, originated as a more traditional payware development firm. Founded in 2019 to create products for Prepar3D, it quickly scaled into one of the more established companies in the space (iniBuilds, 2025). According to the company website, the company now employs over 80 staff in roles ranging from modeling, programming, digital marketing, HR, and documentation. iniBuilds entered the Microsoft Flight Simulator market with a high-profile partnership with Microsoft, marking a shift from a mid-scale third-party developer to an officially endorsed content producer.

4.1.2 End Users - Appendix 1.3

All three groups view users as essential stakeholders, though their methods of engagement differ considerably. Horizon and FBW, as freeware developers, place heavy emphasis on user involvement for quality assurance, feedback, and development support. iniBuilds, as a commercial entity, approaches community interaction primarily through product acquisition and communication and support channels.

Horizon employs user feedback from Discord and GitHub for post-release patches and uses a select group of

streamers, pilots, and experienced users to test products prior to launch. Although external contributors are not directly involved in core development, user suggestions are taken seriously. *"...realistically where we would really need the community's assistance with would be quality assurance..."*. The team emphasizes a conservative communication style, preferring to underpromise and overdeliver, rather than create hype they may struggle to fulfill. Financially, Horizon operates with minimal reliance on donations, supported by tools such as Patreon and Buy Me a Coffee, while depending largely on free development software. They gather much of their funding from the core team members themselves, who view this as an investment in their passions and hobbies. *"...it's coming out of one of our pockets..."*

Hues employs a more demand-driven model, allowing users to request specific liveries via Discord. Due to low donation returns, they transitioned to a commission-based system where users pay for custom liveries, helping offset high costs such as Adobe software licenses. *"...I want you guys to make some money. Best way to do it I think would be by a commission..."*

FBW's engagement model is significantly more open when it comes to direct user involvement. They brand themselves as *"...open-source and free..."* encouraging direct community contributions in code, media, documentation, and support. Their infrastructure (Discord, GitHub, Open Collective) fosters ongoing collaboration. They also run a volunteer-led "ground school" YouTube series to help users learn to operate their A320 mod. FBW is fully volunteer-driven and funds their work through Open Collective, where financial transparency is maintained publicly. *"I wouldn't say we live and die by it, but that is the core way we obtain funds to run our mission, and we do it through open collective..."*

iniBuilds' website states that the team interacts with users primarily through their Discord, forums, and social media platforms. User engagement focuses on product support and announcements, rather than collaboration. Financially, they rely on product sales through their store and marketplace listings, consistent with their commercial model.

4.1.3 Content Creators - Appendix 1.4

Content creators, who include those who create videos on YouTube or conduct streams on Twitch for flight simulator content, have played an influential role in the growth and visibility of all three developer groups. Early-stage partnerships with these creators were used to showcase products, while over time, some of these relationships evolved into more integrated collaborations.

Horizon initially reached out to creators to build awareness of their brand, but now receives partnership requests from the creators themselves due to their increased recognition. *"...was email outreach and almost being a salesman..."*Hues follows a similar path, particularly collaborating with virtual airlines, many of whom use their liveries in

livestreams. One Hues representative noted that at any given time, their work is visible in active streams across the internet. *“I can go turn on a stream from anywhere and I guarantee you, I’ll find at least one stream with somebody using one of our liveries”*

FlyByWire also leveraged creator relationships early on. Over time, they incorporated prominent content creators such as British Avgeek and Easyjetsimpilot into their internal team, assigning them roles in quality assurance, development, and community management. This approach blends brand visibility with operational and developmental contribution. *“And then British avgeek, he’s actually at one point is or still on our development team. He did a lot of testing for us, creating videos so that really helped expand our reach without having to field our own team of video creators.”*

iniBuilds provides select creators with free copies of products for review and maintains a mutually beneficial promotion model. They also allow smaller creators to advertise their content within the official Discord server.

4.1.4 Other Developers - Appendix 1.5

In addition to engaging with users and content creators, developers operate within a broader ecosystem of other add-on creators, where collaboration often takes precedence over direct competition. This section examines how iniBuilds, FBW, and Horizon interact with other developers in sharing resources, establishing partnerships, or supporting smaller teams through commercial platforms. A collaborative spirit is a defining feature of the ecosystem, with developers frequently sharing recognition, resources and technologies to collectively improve the simulator experience. This is a common theme observed with all three developers

Horizon has collaborated with both freeware and payware developers, including an early partnership with LatinVFR to produce enhancement modifications to their A320 family. They now use FlyByWire’s open-source flight systems to build their Dreamliner, and collaborate with Headwind to distribute products via shared installers—reducing friction for users managing multiple addons and reducing the need to download multiple installers. *“...members of the flight sim dev community should really be working on consolidating all of these [installers] rather than creating new ones...”*

FBW emphasizes open collaboration and has made key components of their aircraft systems freely available to other developers such as Horizon and Headwind. They support this with technical documentation and active developer channels, citing a goal of improving the flight sim space collectively. *“A lot of our developers, even our core team members, are also part of these teams, either as I would say consultants per SE or actual developers with their with their products...in general it’s it’s good for developers you know to just be we’re all here making the same thing we might as well have fun doing it right?”*

iniBuilds does not engage in direct co-development, but supports smaller developers commercially through its marketplace. These developers can apply to list their products as vendors, of which the form and guidelines can be found on the company website, benefiting from iniBuilds’ user base and reputation.

4.1.5 Microsoft/Asobo; Platform Hosts - Appendix 1.6

All three cases express appreciation for Microsoft and Asobo’s efforts to support third-party developers in creating additional content and products for flight simulation enthusiasts to use, although experiences vary in terms of accessibility, responsiveness, and long-term planning.

Horizon appreciates the SDK’s flexibility and marketplace anti-piracy features, but reports slow communication, with delays of several weeks for support tickets, as well as delays of up to several years to upload products onto the in-game Marketplace *“There are horror stories coming out from the moment of application...”*. They also express concern about platform instability—particularly the transition from MSFS 2020 to 2024, which they feel contradicted Microsoft’s earlier “10-year roadmap.” Horizon notes that adapting to engine changes has required duplicative work, where developers are forced to produce multiple products to accommodate for both simulators, and creates future uncertainty for developers, especially with yet another 2028 rendition of the simulator in the works

FBW takes a more favorable view. While acknowledging platform limitations (e.g., lack of a working weather radar API halting them from adding this feature to their own aircraft), they commend Microsoft and Asobo for their willingness to collaborate and improve tools. FBW maintains strong internal contacts within both organizations and is closely involved in SDK updates. However, they have withdrawn from the Marketplace due to licensing incompatibilities between FBW’s MIT license and the platform’s GPL requirements. *“They wanted MIT, and we’re GPL, and as a team, you know, we want to stay GPL. That’s our decision. So we left a marketplace, but it was it can never be said that. Didn’t you know? Like we didn’t talk to them about it?”*

iniBuilds, by contrast, enjoys a more privileged relationship with Microsoft and Asobo. They contributed official aircraft for the MSFS 40th Anniversary update and continue to develop base content for the simulator, namely adding the A320 NEO and A330 families to the 2024 simulator as base products. This relationship has provided them with both funding and visibility, allowing them to invest in large-scale commercial projects such as the Airbus A350 and London Heathrow scenery.

4.2 User Survey

A universal survey was created to gather insights from end users of the three featured developers: iniBuilds, FlyByWire, and Horizon Simulations. The survey was distributed through the Discord servers of Horizon and

FBW, the flight simulation subreddit, and through direct outreach to flight sim users. Respondents were allowed to take the survey multiple times—once per developer—ensuring each user could share their insights for each team. In total, 150 valid responses were collected, with 66 responses for iniBuilds, 37 for FBW, and 47 for Horizon Simulations. The survey focused on four core areas: communication and transparency, motivation for engagement, willingness to donate or contribute, and suggested improvements.

4.2.1 General Findings

Survey data indicates that a vast majority of respondents are frequent users of Microsoft Flight Simulator, with 87.3% describing themselves as either “very frequent” or “frequent” users, as shown in appendix 2.1. This high engagement level suggests a knowledgeable and experienced respondent base likely to have repeated interactions and engagements with the developers being studied.

Of the total responses, 44% chose to provide feedback on iniBuilds, 31.3% on Horizon Simulations, and 24.7% on FlyByWire, as shown in the following figure



Figure 1: Appendix 2.2 - Response rate per team

The higher response rate for iniBuilds may be attributed to their longer tenure in the commercial add-on space and broader product catalog. However, it is interesting to see that Horizon Simulations received more responses than FBW, despite the latter’s larger Discord community (90,000+ vs 17,000+) and longer presence in the space.

Respondents who used products from all three developers were asked to rank them in terms of general community engagement. FBW received the highest approval, with 50.4% placing it first, followed by Horizon (27.3%) and iniBuilds (25.9%). Not only did iniBuilds receive the lowest share of first-place votes, they also garnered the highest proportion of third-place rankings (52.6%), suggesting relatively lower perceived effectiveness in community engagement compared to the other freeware teams. The detailed visual can be seen in appendix 2.3. This ranking is consistent with the survey data that will be presented in the coming sections.

4.2.2 Communication and Transparency

Discord was the most commonly used communication platform across all three developers, with usage rates of 77.3% for iniBuilds, 89.4% for Horizon, and 94.6% for FBW, which can be found in appendices 2.4, 2.5, and 2.6. These figures reflect the key role Discord plays as

a communication platform in developer–community interaction in the flight simulation ecosystem.

Participants were asked to rate the quality of communication using a bank of descriptive terms (i.e. clear, informative, vague, unprofessional etc.) that were then categorized into positive and negative sentiments to determine the overall perception of communication. An example of the complete list of sentiments is shown in the following figure:



Figure 2: Appendix 2.7 - Communication sentiment (iniBuilds)

FBW had the highest communication approval rate at 95.7%, followed by Horizon with 84.7%, and iniBuilds with 78.2%. While all three developers received generally positive impressions, FBW's near-unanimous approval rate suggests a particularly strong reputation for clear, informative and professional communication. The complete detailed visualization of this can be found in appendices 2.7 through 2.9

Transparency was also explored through user ratings of trust in development updates across 5 levels ranging from high trust to low trust, seen in appendices 2.10, 2.11, and 2.12. FBW again scored highest, with 94.6% of respondents indicating high or somewhat high trust in their transparency. Horizon followed with a 76.6% positive trust rating, and iniBuilds trailed at 65.2%. While iniBuilds' rating is still relatively positive, the data indicates room for improvement compared to its freeware counterparts.

Participants were also asked about how well each developer responds to user feedback. This was asked across 4 levels ranging from actively responding to completely neglecting, with an option to abstain if no knowledge on the matter is the case. FBW received an 89.2% positive rating for actively incorporating feedback into their development process, reflecting their open-source model. Horizon followed with 61.7%, and iniBuilds with 48.5%. Interestingly, iniBuilds had a higher share of neutral responses with 34.8%, suggesting that while users feel heard, they do not always see their feedback directly

reflected in product changes. Detailed visuals of these numbers can be observed in appendices 2.13-2.15.

4.2.3 Motivations for Engagement

Respondents were asked to identify the qualities that made their selected developer stand out compared to others. An example of the choices can be found in the following figure

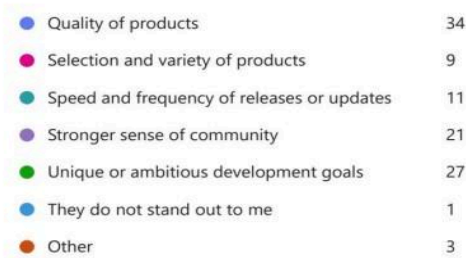


Figure 3: Appendix 2.17 - Comparison to other developers (FBW)

Product quality emerged as a consistent motivator across all three, with 91.9% of FBW users, 66.0% of Horizon users, and 51.5% of iniBuilds users citing it as the primary reason for engagement, though this was not the main driving factor for iniBuilds users. For iniBuilds, the most cited factor was product variety at 59.1%, while FBW users highlighted the team’s ambitious goals as the second main factor with 73.0%. For Horizon, community presence and unique product offerings, such as the freeware 787, were significant factors, with each cited by roughly 43%. These figures can be found in more detail in appendices 2.16-2.18

When asked about trust in the stability of released products across 5 levels from very much to not at all, FBW again received the strongest positive responses, with 67.8% choosing “very much” and no respondents indicating any level of low trust. Horizon received 51.1% “very much” and 40.4% “somewhat” trust. iniBuilds had a more divided response, with 36.7% selecting “neutral,” and a combined 43.9% selecting “somewhat” or “not necessarily,” reflecting a more negative perception of stability among their user base compared to the other developers. Appendices 2.19-2.21 offer more depth on this information.

Users were also asked why they continue to engage with each developer. An example of the options to choose from are shown in the following figure

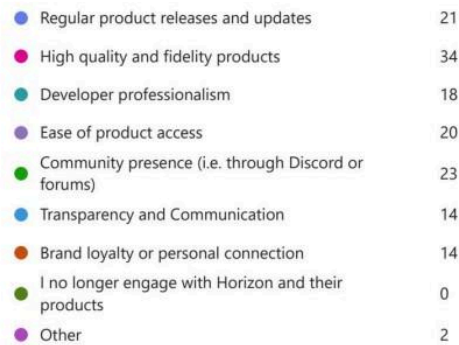


Figure 4: Appendix 2.24 - Engagement motivation (Horizon)

Quality of product was once again a driving factor for all 3 developers, where 63.6%, 95.0%, and 72.3% of respondents chose this option for iniBuilds, FBW, and Horizon respectively. In addition to this, iniBuilds respondents highlighted regular updates with 56.1%, FBW respondents emphasized developer professionalism at 54.1%, and Horizon users focused on community presence 48.9%. These numbers can be traced back to appendices 2.22-2.24. Only iniBuilds had respondents who indicated they no longer engage with the developer with 10.6%, most of whom cited poor handling of feedback, particularly in reference to the controversial release of the A350. A complete list of these responses can be found in appendix 2.22.1

4.2.4 Willingness to Donate or Contribute

This section explored users’ willingness to support development financially or through direct participation, with the approach to addressing this question adapted for each developer’s unique business model.

For iniBuilds, 75.8% of users stated they only purchase products based on need, while 13.6% occasionally purchase as a gesture of support, and 10.6% do so often. This is visualized in appendix 2.25.1. When asked if they would consider donating to receive exclusive benefits, such as early access or special discounts, a majority 51.5% declined, preferring traditional purchasing models. However, 31.8% were open to donation-based options depending on the benefits, and 16.7% expressed interest in donating regardless of incentives. This can be seen in appendix 2.25.2

FBW users demonstrated a much higher rate of involvement beyond product usage. 23 of the 37 (62.2%) respondents stated to have some involvement in the various FBW projects, as seen in appendix 2.26.1. In appendix 2.26.2, it is seen that among the 23 users who had contributed, 47.8% participated in quality assurance, 30.4% as financial backers, and 21.7% as coders or programmers. Key motivators included a shared passion for aviation (60.9%) and the desire to improve the aircraft they fly

(47.8%), which is represented in appendix 2.26.3. Despite this involvement, only 2.7% of all FBW users regularly donated financial contributions, and 27% had done so occasionally. A notable 37.8% had considered donating but had not yet done so. This is observed in appendix 2.26.4

Horizon users were involved primarily in moderation and user support roles on the Discord server (68.1%), with some engaged in testing and quality assurance (23.4%), as observed in appendix 2.27.1. In appendix 2.27.2, it is observed that only 8.5% had ever donated, and just 2.1% did so regularly. However, 40.4% had considered donating in the past, suggesting that while Horizon does not actively solicit public funding, a willing donor base may still exist.

4.2.5 Suggested Improvements

Participants were asked to suggest improvements in community engagement strategies or approaches for each developer. iniBuilds received 46 responses to this question, with 33 respondents offering specific suggestions. A complete organized list of these responses can be found in appendix 2.28. Key themes included better response to user feedback (21.2%), introducing a system for community voting on new products (27.3%), and improved response to user support requests (18.2%). These suggestions echo earlier survey responses indicating mixed perceptions of engagement and trust.

All 37 FBW respondents provided feedback, though only 14 had additional suggestions. Among those who did, the most common recommendations were more frequent development updates (42.9%) and diversification of the product lineup (28.6%). Overall, the feedback was minimal, indicating high satisfaction with existing practices.

Horizon received 46 responses, with 26 stating they had extra improvements to suggest. Among those who did offer feedback, the dominant theme was the desire for more frequent development updates (53.8%), followed by greater media presence and content sharing (23.1%). This aligns with earlier insights that Horizon maintains a more reserved communication style, which users recognize but sometimes wish were more transparent or proactive with the community.

5 CONCLUSIONS

This chapter presents a discussion of the findings derived from interviews with addon developers, secondary data from the iniBuilds website, and the user survey. The purpose of the research was to explore how different types of flight simulator developers engage with their communities, and how these interactions influence the long-term growth and sustainability of their projects. By examining the practices of iniBuilds, FlyByWire, and Horizon Simulations, the study aimed to understand how developers secure support, whether financial, technical, or reputational, from their environments.

The results presented in Chapter 4 revealed a range of strategies employed by developers to communicate with

users, incorporate feedback, and foster ongoing engagement. They also highlighted how user motivations and expectations differ based on the developer's structure, approach, and perceived trustworthiness. This chapter will now interpret these findings in light of the research questions and theoretical frameworks established earlier in this report.

5.1 Answering the Research Question

5.1.1 Sub-Question 1

This section focuses on the first sub-question *“How do freeware and payware flight simulator developers differ in how they engage with their communities to support their respective development and funding models?”* The data suggests that freeware and payware developers adopt unique engagement models, shaped largely by their funding structures, available resources and organizational size. FlyByWire and Horizon Simulations, as freeware developers, rely heavily on open communication, user contributions, and community goodwill. FlyByWire, in particular, boasts an open-source co-creation model, inviting users to contribute to development, documentation, marketing, and support. Their high approval rating in survey responses—95.5% for communication quality and 89% for feedback integration—reflects this collaborative approach.

Horizon Simulations adopts a more restricted form of freeware engagement, leveraging strategic partnerships with streamers, developers and a more managed feedback system. While not as open-source as FlyByWire, Horizon still engages users in testing, community support, and brand exposure. Their cautious communication strategy—preferring to underpromise and overdeliver—helps manage user expectations and reduce pressure on internal resources.

In contrast, iniBuilds operates as a commercial payware developer with a more traditional transactional model. While they maintain active communication channels such as Discord and official forums, the relationship with users is less participatory. The survey showed that iniBuilds had the lowest rating for feedback incorporation (48% positive), and more mixed views on transparency and stability. These findings suggest that while iniBuilds provides professional and high-quality products, users perceive their engagement style as more distant compared to the other freeware teams. However, iniBuilds compensates for this by offering a broader and more polished product range, which users largely identified as a primary factor for continued support.

Financial models also vary significantly. FlyByWire and Horizon fund their operations through community donations and internal resources, while iniBuilds relies almost entirely on product sales and funding from their strategic partnership with Microsoft. Interestingly, the majority of iniBuilds users stated that they purchase products only when needed (75%), while a small segment indicated willingness to donate for added benefits. For Horizon and FlyByWire, while actual donation rates were modest, a notable portion of users (41% for Horizon; 36%

for FBW) reported considering financial support, indicating a great potential for community-based funding when supported by strong engagement practices.

5.1.2 Sub-Question 2

This section focuses on addressing the second sub question “*How do flight simulator users decide which developers or projects to support, and what factors shape their engagement behavior?*” The survey revealed that product quality is the most influential factor driving user support across all three developers. This was cited by 95.0% of FlyByWire users, 72.3% of Horizon users, and 63.6% of iniBuilds users. Beyond quality, users of FBW and Horizon valued community presence, transparency, and ease of communication. In contrast, iniBuilds users placed more emphasis on product variety and professional presentation.

Trust also played a significant role. FlyByWire received the highest trust rating for product stability, with 67.8% believing that the team regularly maintains stability in releases, and no respondents indicating low trust. Horizon followed closely with 51.1%. iniBuilds, however, had more neutral or skeptical responses, with 36.7% expressing neutral trust and 16.7% indicating limited confidence. Notably, some users who disengaged from iniBuilds cited issues with how the team responded to criticism, including the handling of feedback related to their A350 release.

Users also reported different motivations for staying engaged. For FBW, professionalism and belief in the team’s ambition were key motivators. For Horizon, the strength of the community and responsiveness mattered most. For iniBuilds, regularity of releases and brand recognition remained important, though some users expressed a desire for better transparency and feedback handling mechanisms.

5.1.3 Main Research Question

This section will address the main research question “*How do flight simulator developers leverage community engagement to secure funding and sustain long-term developmental, community, and financial growth?*” The findings suggest that there is no single pathway to success. Rather, there are different engagement models that can support growth depending on the developer’s structure, objectives, and positioning.

FlyByWire demonstrates that open-source, volunteer-led development can succeed when coupled with deep community trust, transparency, and clear communication. Their growth is driven by participation and personal investment rather than financial investment. Horizon Simulations thrives as a smaller freeware team by focusing on high-quality, niche products and building word-of-mouth reputation through content creators and limited but meaningful user engagement. Their emphasis on product polish and discretion helps them manage growth sustainably. iniBuilds, as a payware developer, leverages commercial professionalism, a wide product catalog, and strong market presence. Their success stems from brand

equity or value and a formalized business model, though they may benefit from deeper community responsiveness.

In conclusion, while all three developers engage with their communities differently, the data suggests that authentic communication, consistent delivery, and a sense of shared purpose are the most important drivers of sustained success—regardless of whether a team is operating commercially or as a freeware project.

5.2 Practical Implications

This research provides practical implications and valuable guidance for emerging and prospective developers in the flight simulation community. By analyzing the engagement strategies of iniBuilds, FlyByWire, and Horizon Simulations, it is evident that there are multiple viable models for community engagement and sustainable growth—each with their own set of strengths and challenges. For new development teams, identifying a strategic direction early on, whether adopting a payware or freeware approach, is essential for building credibility, attracting users, and managing growth.

It is first important to acknowledge the benefit of choosing a clear development model. Developers seeking to adopt a freeware approach—as practiced by FBW and Horizon—should focus more on building community trust through transparency, responsiveness, and inclusion. FBW’s use of public development platforms such as GitHub, the “Ground School” YouTube series, and an open donation infrastructure via Open Collective exemplify how openness can generate sustained support and attract a wide range of volunteer contributors. Horizon Simulations, while more reserved in its communications, similarly leveraged community Quality Assurance testers, content creators, and word-of-mouth marketing to grow organically without financial dependence.

For those pursuing a payware model, such as iniBuilds, the focus shifts toward product professionalism, timely releases, and customer support. IniBuilds’ strong market presence is tied to their larger product range and their direct involvement with Microsoft and the MSFS marketplace. However, survey results showed that user expectations and critiques are higher when money is involved, particularly in areas such as communication quality and responsiveness to feedback. Up-and-coming payware developers must therefore ensure that professional polish is matched with consistent user engagement and support, especially ex post releases.

Another key insight is the need to balance transparency with expectation management. FBW’s high transparency ratings and Horizon’s strategic restraint in promises and communication both demonstrate effective, but very different, ways to manage user anticipation. New developers must decide early whether they want to pursue a highly open or more curated approach to sharing updates—but either way, consistency and clarity are crucial.

In terms of building visibility, the study also shows the importance of early partnerships with content creators. Both Horizon and FBW had initially relied on creators to showcase products and generate awareness. Over time, FBW even integrated well-known creators into their core team, strengthening their outreach capabilities and utilizing the expertise of these creators. Developers with limited marketing budgets can adopt a similar strategy by proactively offering early builds or exclusive content to creators in exchange for exposure.

Finally, regardless of model, new developers should invest in creating clear channels for community input and support, whether through Discord, GitHub, or forums. Survey data indicates that users value being heard—even if their feedback isn't always acted on. Developers who implement systems for structured feedback collection, transparent changelogs, and visible community roles are more likely to retain loyal users.

5.3 Theoretical Implications

This research also provides some answers to how the predetermined theoretical frameworks discussed earlier in the report are linked to the study. It illustrates what theoretical lessons can be taken from the case-studies, and how they may be applied to similar situations

5.3.1 Donation-Based Crowdfunding

The core principle of DBC is voluntary user contributions without expectation of tangible rewards. It was especially relevant to FlyByWire and, to a lesser extent, Horizon Simulations. FBW operates primarily on voluntary contributions, both financially and in terms of expertise and workforce. It also maintains transparency of the uses of contributions through its Open Collective platform. Although only 3% of survey respondents reported donating regularly, 36% stated they had considered donating, showing an alignment with DBC principles of intent for voluntary contribution. Horizon does not actively ask for donations, yet 41% of respondents had considered financially supporting the team, suggesting that goodwill and belief in a project can potentially induce support even without explicitly fundraising campaigns. In contrast, iniBuilds, as a payware developer, falls outside the scope of DBC, depending on traditional market-based transactions rather than community-driven funding. Consumers were also not entirely keen on contributing donations towards the team, even rejecting the notion of Reward-Based Crowdfunding by receiving certain benefits for their donations, as they believed that the prices they pay should already be enough support from their end.

5.3.2 Social Exchange Theory

SET states that parties engage in reciprocal relationships and interactions based on the perceived value of exchange. This was strongly reflected in FBW's operational model, where users contribute time, code, quality assurance, or feedback in exchange for inclusion, recognition, and influence over the products they use. This reciprocal exchange is not based on financial compensation, but on mutual benefit and shared purpose.

The survey findings confirmed this with FBW users highlighting the professionalism of the team and the strong sense of community as primary reasons for ongoing engagement. Horizon also demonstrated this dynamic through community-led quality assurance and user suggestions for liveries through the Hues subgroup. Even in iniBuilds' case, SET is partially visible. Some users reported making purchases as a form of support, rather than purely for product need, suggesting a blend of both financial and social motivations.

5.3.3 Co-Creation and Participatory Culture

This theory discusses the desire of consumers to not only consume goods and services, but to actively participate in the production and development of these goods and services. It is more clearly adopted by FBW, where their development process is observed to be open-source and collaborative. Users participate in all aspects of the project. These range from documentation to coding to managing community support. Feature suggestions and bug fixes are also visible on GitHub in real time. This high level of transparency and accessibility fosters a strong participatory culture, where users are not just consumers but active co-creators. Horizon exhibits a more limited form of co-creation, involving users in testing and livery requests, though with tighter internal control. iniBuilds, as a more commercially focused entity, exhibits minimal participatory culture, focusing more on professional content delivery and less on direct user contribution to development.

5.3.4 Theory of Planned Behavior

TPB emphasizes that user actions are shaped by their attitudes, perceived social norms, and sense of control over outcomes. This framework is helpful in understanding why users choose to engage—or disengage—with particular developers. For instance, FBW users often reported high trust and belief in the development team's goals, reflecting positive attitudes. The open-source nature of the project provides a high sense of behavioral control, where users can actively contribute and see their input reflected in the product. The visibility of others engaging also reinforces this behavior. Horizon users, though less involved in development directly, often cited the value of community presence and ease of communication as motivating factors. This positive sense of control and community within Horizon allows users to feel involved and engage more with the team without the team having to give up too much control over development, opting to keep things in house. In contrast, some iniBuilds users expressed disengagement due to perceived issues with feedback handling, indicating a breakdown in the TPB components, particularly attitudes and perceived influence.

5.3.5 Community Motivation Models

5.3.5.1 Uses and Gratification Theory

This theory argues that users engage with media or platforms to satisfy specific needs that include informational, social, or personal needs. In the case of this study, this was more focused on product consumption rather than content and media consumption. This was

evident across all three developers, particularly in how users cited transparency, communication, and professionalism as reasons for continued engagement. For FBW, educational tools such as the "ground school" YouTube series satisfied informational needs, while Discord served social purposes. Horizon users highlighted the appeal of belonging to a growing community, while iniBuilds users gravitated toward product variety and brand strength

5.3.5.2 *Communities of Practice*

This model talks about how individuals or parties can come together to create or develop new products or services under shared interests and passions. This was most clearly observed in FBW, where contributors formed a community centered around aircraft development. New users can venture into key roles, and knowledge is shared openly. Horizon, while more centralized, also fosters a community of learning and informal "mentorship" through Discord support roles, where more experienced flight simmers can help out new users, as well as media partnerships. iniBuilds does not necessarily employ this model due to its commercial nature.

5.4 Limitations

While this study offers valuable insights into the dynamics of community engagement among flight simulator developers, several limitations observed in the research must be acknowledged.

Access to primary data posed a slight challenge. Although in-depth interviews were successfully conducted with representatives from FlyByWire and Horizon Simulations, iniBuilds was unable to participate due to internal constraints. As a result, the analysis of iniBuilds relied primarily on secondary sources, such as articles, blog posts, and website materials. While these sources offered some useful background, they lacked the depth and nuance that the direct interviews provided, which unfortunately limited the comparative balance across the three cases.

Second, the study focused mainly on aircraft add-on developers, omitting other key segments of the flight simulator ecosystem. These include scenery developers such as ORBX and MK Studios, developers of utility software such as REX and GSX, and subscription-based services such as SayIntentions.ai or BeyondATC. These segments may exhibit different engagement models, funding approaches, or user expectations, and future research would benefit from incorporating a broader cross-section of the industry to provide prospective developers more pathways to success.

Third, the survey relied on self-selection, meaning participants were likely more engaged users who follow developers on Discord or Reddit. This introduces the potential for bias, as more casual users, or those with negative experiences, may have been underrepresented. The survey was also not posted on an official iniBuilds platform, meaning the participants who gave their insights on iniBuilds could potentially have also harbored a bias

against iniBuilds, and more positive and loyal consumers were omitted from the study

Additionally, while Microsoft Flight Simulator 2020 was originally marketed as a 10-year project, the unexpected release of MSFS 2024 raised concerns among developers interviewed. With the now possible release of another 2028 version, developers have even more concerns regarding the changes in SDKs and system capabilities, and how these will affect their operations. However, this study did not explore in depth how shifting platform strategies from Microsoft/Asobo may affect long-term planning for third-party developers.

5.5 Future Research

This study opens several promising avenues for future research into the evolving ecosystem of flight simulator development.

One potential direction is a comparative study of exclusively payware developers, expanding beyond iniBuilds to include other established names such as PMDG, Aerosoft, and MK Studios. Such a study could provide deeper insight into how commercial teams differ in their strategies for community building, marketing, and customer retention.

Another area worth exploring is the hardware ecosystem surrounding flight simulation, which is also a very important part of the flight simulation experience. Research could investigate how users choose between building simple or highly complex setups, and whether they prefer to source components from a single brand or mix manufacturers. Understanding the user decision-making process in hardware acquisition could complement findings on software engagement as well.

A third opportunity lies in examining Microsoft's platform strategy, specifically the early transition from MSFS 2020 to MSFS 2024, despite the original plan of a 10-year development cycle. Studying how such shifts impact developer trust, planning, and technical adaptation would be especially relevant to understanding long-term sustainability in a more platform-dependent development environment such as Microsoft Flight Simulator.

Additionally, future research could look into subscription-based and hybrid monetization models, including services such as SayIntentions.ai or BeyondATC, to assess how users compare recurring revenue structures to freeware, donation-based or one-time purchase models.

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