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Player Loyalty in Subscription-Based Online Games: An Examination of World of Warcraft through RFM Analysis and the F-Model

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ABSTRACT

This study investigates the dynamics of player loyalty through the example of World of Warcraft (WoW), one of the oldest and most significant subscription-based online games. Unlike free-to-play or one-time purchase models, WoW requires continuous financial commitment from its users, making loyalty a key factor in its long-term success. The research is based on a quantitative survey of 525 respondents and employs two well-established frameworks: RFM (Recency, Frequency, Monetary) analysis for segmenting players according to their value, and the F-Model for uncovering motivational patterns. The combined application of these two approaches offers a novel perspective on the study of online gaming, shedding light on how emotional attachment, nostalgia, and social experiences shape lasting engagement. The findings reveal that while innovation is essential to maintain competitiveness, excessive changes may jeopardize the stability valued by long-term subscribers. The study contributes to linking loyalty research, gaming studies, and digital service management, and provides practical recommendations for developers on maintaining user satisfaction, effectively segmenting players, and balancing new content with community expectations.

Keywords: Player loyalty, Subscription-based games, World of Warcraft, RFM analysis, F-model, Consumer segmentation, Digital game research, Service management.

INTRODUCTION

Over the past decades, the world of online gaming has evolved into one of the most dynamically developing sectors of the entertainment industry. Several business models operate in parallel on the market: some games require a one-time purchase; others rely on a free-to-play structure, while still others follow a subscription-based system. Among the latter, World of Warcraft (WoW) stands out as a title that has been present for more than twenty years and continues to attract a significant and loyal player community.

A unique feature of WoW is its monthly subscription model, through which players provide continuous financial support to the developers. This means that loyalty is not merely a psychological or social phenomenon but also a direct financial factor. A loyal player base ensures stable revenue in the long run, while the termination of a subscription results in an immediate financial loss. Therefore, examining player loyalty is a key issue for both digital service management and marketing.

The purpose of this study is to analyze the evolution and measurement of player loyalty through the example of World of Warcraft. To achieve this, two theoretical frameworks are employed: the RFM

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(Recency, Frequency, and Monetary) analysis, which traditionally serves to determine customer value, and the F-Model, which explores players' motivational backgrounds.

Using these two models, the study aims to uncover how developers can strike a balance between innovation and the preservation of tradition. Given WoW's more than two-decade history, nostalgia is as defining an experience for many players as innovation itself. Some seek minimal change in order to relive their childhood memories, while others continuously expect new content. This duality poses a serious challenge for developers: too little innovation can lead to market decline, while excessive novelty may alienate the loyal audience. Excessive changes are particularly risky when they disrupt those archetypal patterns to which players are attached on an identity level through their characters (Souza & Rocha, 2024).

The research is based on a questionnaire survey of 525 respondents, enabling the segmentation of players by value and the mapping of motivational patterns. Accordingly, the article is structured as follows: after the introduction, the theoretical background outlines the intersections between loyalty research and game psychology; the methodological section presents the framework and tools of the study; the results section discusses the findings derived from the RFM and F-Model approaches; and finally, the paper concludes with practical recommendations.

THEORETICAL BACKGROUND

The concept of loyalty is one of the most important and most extensively studied categories in marketing and management research. The literature has long emphasized that retaining existing customers is more cost-effective and efficient for companies than acquiring new ones (Reichheld & Sasser, 1990). Loyal consumers not only make repeat purchases but also tend to spend more, show lower price sensitivity, and develop emotional attachment to the brand. Moreover, loyalty generates valuable community activity and positive word-of-mouth, which can attract new consumers to the company in a highly cost-effective manner

As Heidrich (2006) points out, loyal customers typically share the following characteristics:

- When purchasing the next product, they choose the company without considering competitors' offers.
- They are willing to act as references for the company and recommend its products or services to others.
- During product use, they provide feedback and suggestions for product improvement, new products, or new versions.

For this reason, as emphasized by Hetesi (2002, 2007), every organization should study its own consumers, analyze the groups with different attitudes, and develop effective tools for their retention and loyalty building.

However, the interpretation of loyalty is not uniform. From a psychological perspective, loyalty is primarily attitudinal, manifested in emotional attachment, stability of preferences, and positive experiences associated with the brand (Oliver, 1999). In contrast, the behavioral approach focuses on actual consumer behavior, such as purchase frequency, subscription duration, or service usage intensity (Dick & Basu, 1994). Subscription-based services, including World of Warcraft, create a special situation where the two dimensions are closely intertwined: emotional attachment often materializes in direct financial commitment, expressed through the regular payment of subscription fees.

It is also important to distinguish loyalty from habit and addiction. While habit involves automatic repetition without emotional attachment (Boros, 2021), and addiction represents a compulsive and often harmful behavior (Verdes, 2023), loyalty is a conscious, positive attachment to a brand, reflected in faithful commitment and even indifference toward competitors (Agárdi, 2010; Hetesi, 2007; Heidrich, 2006). The practical relevance of this distinction lies in the fact that maintaining

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loyalty requires more than supporting mere repetition: it necessitates trust, consistent service experience, and genuine value creation.

In the online environment, the concept of e-loyalty also becomes relevant. Here again, it is crucial to recognize that mere repetition or promotion-based "loyalty programs" do not necessarily indicate true loyalty, as price-sensitive users may easily switch to better offers. Sustainable loyalty strategies therefore rely on personalized value creation, proactive identification of customer needs, continuous dialogue, and a coherent, positive user experience (Heidrich, 2006).

Trust represents the fundamental pillar of long-term loyalty. As trust strengthens throughout the service process, it leads to durable relationships and loyalty. Sustainable loyalty further requires the consistent fulfillment of the "three Cs" of consumer expectations—cost (value for money), choice, and convenience (Baksa et al., 2021).

Marketing practice has developed a variety of tools for measuring loyalty. One of the most widely used among them is the RFM analysis (Recency, Frequency, Monetary), originally applied in the field of direct marketing (Hughes, 1994), which allows for value-based customer segmentation. Since then, the RFM model has demonstrated its predictive power in numerous industries, including the banking, e-commerce, and service sectors, where it can be used for both customer segmentation and loyalty prediction (Huang, 2025).

The RFM model examines three dimensions:

- Recency (R): how recently the last purchase or activity occurred;
- Frequency (F): how often the customer makes purchases or uses the service;
- Monetary (M): how much money the customer spends.

The model's advantage lies in its simplicity and scalability, making it highly suitable for application in large databases (Jánosa, 2015). It is therefore widely used in retail, banking, insurance, and utility services. For example, a retail chain can distinguish high-spending frequent buyers from occasional shoppers, while in the banking sector, the frequency and volume of transactions can indicate customer value. The application of the RFM model to subscription-based games follows a similar logic: a player's value can be measured by how recently they were active, how often they renew their subscription, and how much they spend on the game (for instance, through purchasing expansion packs or cosmetic content). (Nielsen, 2025).

Recent research related to RFM indicators has also developed dynamic, predictive models capable of estimating both customer value and the probability of loyalty (Huang, 2025).

The underlying principle of the model is straightforward: customers who have purchased recently are more likely to buy again in the future. Those who have purchased more frequently in the past are also more likely to continue doing so compared to those who have not, or who buy less often. Likewise, customers who have spent larger amounts in the past are likely to have the financial means to do so in the future.

In practice, each customer is assigned a score within a defined time interval for each of the three criteria. For instance, in the case of recency, the timeframe can be divided into five categories, and customers are classified according to the timing of their last purchase. Those who made purchases most recently receive five points, while those whose last activity occurred the longest ago receive one point. The same scoring method applies to the other two dimensions. Finally, these three partial scores are combined into a composite RFM score. A customer who achieves the highest score (5-5-5) across all three dimensions receives an overall score of 555, representing the most valuable segment (Jánosa, 2015).

Although the RFM approach is effective, it also has limitations. It does not explain why a customer or player becomes loyal, nor the psychological factors behind such behavior. These gaps are addressed by motivational models, which examine the underlying drivers of player behavior. One of

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the most well-known frameworks in game psychology is the F-Model, which categorizes player motivations. According to this model, players are primarily driven by four main factors:

- Progression: improving characters, leveling up, and achieving milestones;
- Exploration: discovering new worlds, stories, and rule systems;
- Community: maintaining friendships, sharing experiences, and developing group identity;
- Competition: measuring oneself against others, and gaining status and prestige.

Yee's (2006) empirical research demonstrated that these motivations vary in significance among players and often appear in combination. For example, a player may be highly community-oriented while simultaneously being motivated by progression and competition.

Building on the model described above and the findings of the Játékos-Lét Kutatás (Player-Being Research) project, which began in 2010, a new typology of players was developed. As Damsa and Fromann (2018: 21) note, "given that the research is based on self-reporting and self-administered questionnaires, it is important to emphasize that the results reflect how the gaming community perceives the world of games and where players position themselves within it."

The typology identifies two overarching dimensions:

- Human-Centeredness: This category includes players who seek to satisfy social and communal needs through gaming. For them, interaction with other players is of primary importance, whether through communication, teamwork, competition, or a mixture of these.
- World-Centeredness: Players in this dimension are motivated by the desire to detach from reality and explore virtual worlds or alternative realities. They value the opportunity to step out of their everyday lives and take on new roles. Their attention is drawn not to competition or social interaction but to the narrative and world-building aspects of the game.

Based on these two overarching categories and the logic of Bartle's and Yee's models, the F-Model organizes motivations into three main factors and seven subfactors, which help to better understand player behavior (Damsa & Fromann, 2018, pp. 21–22):

1) Competitive Players
- Leaders: For these players, the greatest source of satisfaction comes from the recognition of others. Their goal is to become well-known and respected figures within the gaming community. Everything they do in the game serves this purpose, as achieving social prestige is their key motivation.
- Warriors: These players are driven by the desire to defeat opponents. The more adversaries they overcome, the greater their enjoyment. They are drawn to rankings and strive to climb higher, viewing the elimination of rivals as a path to success.

2) Social Players
- Team Players: They engage with games primarily for shared play, friendship, problem-solving, and collaboration. Some seek emotional security, while others are motivated by practical advantages such as faster progression. For some, achieving a leadership role is a goal, while others simply enjoy spending time with friends, valuing the communal experience above all.
- Relationship Seekers: Two subtypes exist here. One seeks belonging through a specific individual rather than a group, aiming to form a long-term relationship during gameplay. The other views flirting and casual interaction as a natural part of the gaming experience. Despite differing motivations, both are driven by the desire to form social connections.

3) Exploratory Players
- Dreamers: For these players, gaming offers an escape from everyday life. They are captivated more by story and atmosphere than by graphics. Through their characters, they explore and experience the game world, finding joy in alternative identities and relaxation.

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- Collectors: These players take pleasure in accumulating rare items, developing their characters, and achieving milestones. Their motivation lies in satisfying their curiosity and desire for possession and discovery.
- Problem Solvers: Constantly seeking new challenges, they enjoy logical and strategic tasks that test their abilities. For them, the greatest pleasure comes from solving difficult problems.

In summary, the seven player types illustrate the diverse motivations that drive engagement. By recognizing and catering to these varying needs, companies, particularly game developers, can design strategies that encourage continued gameplay and foster player loyalty.

Recent RFM research emphasizes that extending loyalty measurement beyond purely transactional data (for example, by including motivational or psychological dimensions) provides a more complex picture of consumer value (Huang, 2025). The combined application of the RFM and F-Model frameworks is particularly valuable for analyzing player loyalty. While the RFM model quantifies a user's financial value to the company, the F-Model explains why players remain committed. This dual perspective allows loyalty to be understood from both economic and psychological standpoints, aligning with modern marketing thinking that emphasizes mapping the entire customer journey and maximizing customer lifetime value (CLV) (Kumar & Reinartz, 2018).

The CLV concept is especially relevant in subscription-based games, as each additional month of renewed subscription increases company revenue. Loyal players' lifetime value often far exceeds that of newcomers, while their retention costs are typically lower than the acquisition costs of new subscribers. This underscores that studying loyalty is not merely a theoretical exercise but one with direct financial implications.

Overall, the theoretical background shows that understanding player loyalty requires a comprehensive, multidimensional approach. The RFM model provides a practical advantage: recency serves as a quick operational indicator for renewal timing and retention messaging, while frequency and monetary value capture engagement intensity and willingness to spend. Meanwhile, the F-Model, building on the foundations of Bartle and Yee, uses a two-dimensional framework of human-centeredness and world-centeredness, which is further divided into three main factors and seven subfactors of motivation. This structure aligns well with self-reported data and offers a practical basis for tailoring in-game content and experiences.

While RFM allows for value-based segmentation and the measurement of players' economic contribution, the F-Model reveals the motivational patterns underlying commitment. Used together, they provide a comprehensive view of why players remain loyal to subscription-based games and what this means for business performance, financial outcomes, and service management.

BACKGROUND OF THE RESEARCH PROBLEM

How can developers retain long-term loyal players who are attached to familiar gameplay while also attracting new players who are drawn by novelty and innovation? One of the authors of this paper has personally experienced, as a member of such communities, how deeply sensitive long-time World of Warcraft players can be to even the smallest changes. As a Massively Multiplayer Online Role-Playing Game (MMORPG), World of Warcraft represents for many players an immersive parallel world that offers a deep sense of engagement and identity. Therefore, they care not only about how their characters evolve but also about what happens to the world itself (Sun et al., 2023). To them, it is a living, breathing universe experienced through the virtual medium.

In addition, there are nostalgic players who prefer as few changes as possible, not only in the world's design but also in its mechanics. Given the game's two-decade history, an entire generation has grown up with World of Warcraft, associating it with their childhood memories and social bonds formed through the game community. Many players return to the game to escape the pressures of adult life, finding comfort and emotional release by reliving the joyful experiences of their youth. Consequently, they resist drastic modifications that could undermine the nostalgic

atmosphere they have grown to love.

These long-term players often attempt to influence the game's direction indirectly through forums, community groups, and social media, hoping that the developer and publisher will take the majority opinion into account when making decisions.

This situation poses a significant challenge for developers. Without new features and modernization, the game would struggle to attract new customers and would eventually be overtaken by newer, more innovative MMORPGs, leading to a gradual decline in revenue. At the same time, excessive change risks alienating the established player base. Therefore, finding the right balance, introducing enough novelty to attract new users without losing too many loyal ones, is a delicate and essential task.

This balance, however, is highly unstable and sensitive (Souza & Rocha, 2024). From a product life cycle perspective, developer interventions must align with the given life cycle phase, as players' motivations and expectations differ significantly between stages (Yılmaz, 2025). However, there have been previous cases when the company failed to adequately assess players' expected reactions to certain innovations, which caused major outrage within the community and led to negative feedback. A notable example is the Cataclysm expansion of World of Warcraft, whose name proved fitting: it triggered a "cataclysmic" wave of dissatisfaction among players due to the sweeping and controversial changes it introduced (Bergin, 2023).

Of course, in some cases, drastic modifications are necessary to ensure market survival. There have been updates that initially faced negative reception but did not lead the majority of players to suspend or quit the game. Nevertheless, to mitigate the negative impact of such changes, it is crucial to apply theories and strategies that foster and maintain player loyalty. The goal is to ensure that long-term players remain connected to the game not only out of nostalgia but also through product and brand loyalty. Strengthening this attachment reduces the risk of large-scale player migration or loss following major updates or transformations.

RESEARCH METHODOLOGY

To address the research questions effectively, a primary study was conducted. Data collection took place in 2024 through an English-language online questionnaire distributed within World of Warcraft (WoW) player communities. Although the researchers are based in Hungary, the online format and the global nature of the WoW community ensured an international scope for the survey. Since the game itself is only available in English and has no localized Hungarian version, it was assumed that any active player and thus potential respondent would have sufficient English proficiency to complete the survey without difficulty. The questionnaire was shared in the largest Hungarian and English-speaking Facebook groups dedicated to the game. The survey remained open for two weeks, during which 525 valid responses were collected, indicating a high level of engagement and interest in the topic.

One limitation of the questionnaire method is that predefined response options may bias participants' thinking toward the given answer set (Gyulavári et al., 2017). To minimize this restriction, several open-ended questions were included, allowing respondents to express their thoughts in their own words. None of these fields were mandatory, ensuring that participants would not abandon the survey midway. Despite this, a remarkably high percentage chose to provide detailed answers, demonstrating both their interest in the topic and their level of commitment.

The questionnaire consisted of three consecutive sections:

The first section captured general and demographic information, the respondent's relationship with the game, and usage habits. This included questions on gender, total time spent playing, the presence and frequency of an active subscription, experience with private servers (unofficial versions of the game that do not require a subscription fee), favorite and least favorite expansions (and reasons for these preferences), and whether any in-game purchases beyond the subscription had been made.

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The first section concluded with a self-classification task based on the F-Model. First, respondents chose between two main motivational orientations: a human-centered and a world-centered approach. We did not use the typology labels directly. Instead, we presented neutral, behaviorally worded descriptions and mapped responses to the F-Model categories only in the analysis. Then, respondents identified the most representative subfactor by selecting one of seven descriptions.

- "Which description most accurately characterizes you? What matters to me in the game is..."
  - "...the interaction with other players, whether it's communication, teamwork, competition, or a mix of these." (maps to the human-centered orientation)
  - "...the detachment from reality and the exploration of virtual worlds, alternative realities. It's important for me to step out of my daily life and test myself by taking on different roles." (maps to the world-centered orientation)
- "What is your motivating factor for playing a game?"
  - "I want to be known and recognized on a large scale, to have a positive reputation among other players." (mapped subfactor: Leaders)
  - "I find enjoyment in defeating opponents seen in other players, and the more I can defeat, the more I enjoy the game. I like to rank myself and strive to climb higher in this ranking." (mapped subfactor: Warriors)
  - "I find my motivation in teamwork, fostering friendships, solving problems together, and collaborating. (This could be for the sake of individual goals or for relationship-building purposes)" (mapped subfactor: Team Players)
  - "My goal is to establish some form of relationship with another player. (This could be either long-term or short-term)" (mapped subfactor: Relationship Seekers)
  - "It's important for me to immerse myself in the game world by embodying and controlling my character, experiencing the world of the game firsthand." (mapped subfactor: Dreamers)
  - "I want to collect as many rare and unique items or other obtainable things as possible. Additionally, it's important for me to develop my character to the best of my ability and achieve as many achievements in the game as possible." (mapped subfactor: Collectors)
  - "I enjoy situations that require solving logical and strategic problems. That's why I particularly love challenging puzzles." (mapped subfactor: Problem Solvers)

The second section focused on the community dimension. It explored perceptions of the developers' community-building role, participation or willingness to participate in offline events, and feelings of belonging to the online community.

The third section gathered personal opinions and development suggestions, with special emphasis on evaluating game mechanics and responding to open-ended questions.

To enhance data quality and engagement, the introductory and concluding texts of the questionnaire used in-universe NPC (non-player character) language, so that completing the questionnaire felt like completing a quest in the game. For example, the questionnaire opened as follows:

> "Answer all questions for the Monk: 0/1
> Description
> Bal'a dash, malanore! (Greetings, traveler!)
> You have arrived just in time. Before embarking on your next quest, please answer a few of our questions. It will not take more than ten minutes, and your anonymity will be preserved. We will use the answers only for our research, and your responses will greatly contribute to the success of our study. Your reward is the satisfaction of knowing you have helped someone today.
> Rewards
> Experience: 2000 XP"

A progress indicator was included so that respondents could track their completion status. According to feedback, these elements increased completion rates and improved the overall respondent experience, while maintaining professional wording and balancing cognitive load throughout.

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The analysis rested on two methodological pillars:

The first was RFM analysis, where scores from 1 to 3 were assigned for each dimension, producing composite codes ranging from 111 to 333. For the Recency component, the presence of an active subscription served as a proxy, as monthly renewals indicated recent payment. For Frequency, three categories were created based on the number of active subscription months per year. For the Monetary component, the analysis considered whether respondents made additional in-game purchases beyond the subscription, typically cosmetic items that do not provide any functional advantage or gameplay benefit. It is important to note that in addition to in-game purchases, derivative products related to the game, such as mounts, pets, or clothing items, can also serve as strong indicators of loyalty and attachment to the character, following distinct consumer patterns (An et al., 2024).

The second pillar involved measuring motivational profiles through the F-Model. This assessment followed a two-step self-classification process: first, respondents selected a main motivational orientation based on short descriptions; then, from seven subfactor definitions, they identified the one that best described them. The goal of this dual-step process was to identify the dominant motivation and verify internal consistency in self-assessment.

These methodological frameworks established the analytical logic of the study. The next section presents a descriptive and comparative evaluation based on RFM and F-Model results derived from the questionnaire data, followed by a discussion section outlining the main implications and recommendations.

RESULTS

The two-stage measurement of player motivation produced a consistent profile of the sample. In the first self-classification task, based on brief descriptions, 41.9 percent of respondents identified themselves as human-centered and 58.1 percent as world-centered (N = 525).

In the second, more detailed self-assessment, where participants selected from the seven subfactor definitions, similar proportions emerged. The largest group consisted of Dreamers (26.3%), followed by Team Players (24.4%) and Collectors (24.0%). Smaller groups included Competitors (14.5%), Problem Solvers (7.8%), Warriors (9.3%), Leaders (5.1%), and Relationship Seekers (3.0%). When aggregating the seven subfactors into the two main orientations, world-centered equals Dreamers 26.3% plus Collectors 24.0% plus Problem Solvers 7.8% which sums to 58.1%, and human-centered equals Team Players 24.4% plus Warriors 9.3% plus Leaders 5.1% plus Relationship Seekers 3.0% which sums to 41.8%. These aggregated proportions are very similar to the initial two-category classification, which confirms the internal consistency of the measurement.

The distribution of the F-Model subfactors clearly reflects World of Warcraft's world-centered profile. The prominence of Dreamers highlights the importance of storytelling and world-building, while the high proportion of Collectors underscores the significance of collectible items, mounts, appearances, and achievement systems. The strong presence of Team Players points to the enduring appeal of raid and dungeon ecosystems. These patterns align well with the game's overall structure and content offerings.

The RFM analysis was based on the scores assigned to each of the three components. Each criterion could receive a score between 1 and 3. The Recency and Monetary dimensions were derived from binary (yes/no) questions and therefore had no middle category, while the Frequency component, based on annual subscription activity, could take all three values. The composite RFM code thus ranged from 111 to 333, and the results show that a particularly large proportion of respondents achieved the maximum score. If conducted periodically, such analysis could provide developers with reliable feedback on subscriber value.

Turning to the community module, the results show that players regard the developers' community-building role as important, but in World of Warcraft they find the current efforts too weak.

Respondents expressed the strongest demand for more offline events, and they also asked for a stronger online presence and more active communication.

Open-ended responses yielded a substantial number of constructive suggestions, most of which were directed toward developers. According to the authors of this article, a larger-scale investigation could surface even more valuable ideas that may directly contribute to revenue growth.

Several responses touched upon the delicate balance between content updates and stability. Nostalgia and habit were found to play a defining role for many players, explaining their sensitivity to drastic changes. This is exemplified by the community memory of the Cataclysm expansion, often associated with negative reactions.

Interestingly, perhaps in response to this tension, shortly after the present study was completed, World of Warcraft introduced a new content format called Remix. The earlier Classic servers served players motivated by nostalgia. Remix uses accelerated progression, runs for limited periods, and offers reworked expansion content, and it appears designed to attract new entrants. The authors of the present study interpret this as an attempt to serve two distinct segments in parallel, veteran players seeking stability and newcomers seeking novelty.

Finally, several respondents pointed out limitations of the survey method itself. Some noted that the motivational categories felt overly rigid and suggested that a finer-grained scale would better capture nuanced player profiles. Based on this feedback, the authors recommend refining the methodological framework in future studies.

CONCLUSION

Based on the F-model, three dominant motivational groups emerged: Dreamers, Collectors, and Team Players. This distribution outlines the primary priorities for content development and experience design. For Dreamers, world-building and narrative quality are key sources of engagement; for Collectors, long-term motivation is sustained through attainable rewards, milestones, and rare items; and for Team Players, cooperative challenges and shared success experiences are the main retention drivers. Consistent development across these three areas provides the broadest coverage of the current World of Warcraft player base.

For a game developer, understanding the distribution of player motivations serves as a valuable guide to identifying which aspects of the game deserve greater emphasis to maximize engagement and, consequently, loyalty. As observed in the case of World of Warcraft, it would not be financially viable for Blizzard to allocate substantial resources to enhance features that appeal to Relationship Seekers, a group representing only 3 percent of the sample (16 individuals), when addressing the needs of the larger groups would yield far greater returns. Thus, this categorization helps optimize the allocation of resources across motivational segments.

RFM analysis is suitable for identifying groups that are particularly valuable from a retention perspective. Players with high composite scores represent the most stable subscriber base, therefore operational alerts and targeted programs related to them can yield quick returns. The recency component indicates the proximity of renewal, making it useful for timing proactive retention messages. Tracking temporal fluctuations in activity can further improve the reliability of churn risk assessment (Wu et al., 2025). Accurate prediction of engagement levels can help developers design personalized retention strategies (Manju Usha Sree et al., 2024). The effectiveness of retention strategies can be enhanced if the development of game elements is specifically tailored to the needs of different player groups (Divieiev & Grigaliūnaitė, 2024).
In the monetary component, purchases beyond the subscription indicate a willingness to spend more, which can serve as a basis for personalized offers. It is advisable for future research to extend this dimension to derivative products related to the game, as purchasing these items reflects a distinct and previously underexplored form of emotional engagement (An et al., 2024).

Strengthening community building serves as a strategic lever for maintaining loyalty. Expanding offline engagement and increasing the developers' online visibility can, according to feedback,

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enhance emotional attachment to the game. This, in turn, can positively impact subscription renewal rates and brand loyalty, contributing to greater revenue stability and predictability for the publisher.

The balance between content updates and stability should be managed in a way that aligns innovation with dominant player motivations while preserving nostalgic appeal. The examples of Classic and Remix demonstrate that offering parallel formats can accommodate different player needs simultaneously. The risks of drastic changes can be mitigated through systematic monitoring of community feedback and targeted pre-release testing.

From a financial standpoint, these findings have a dual effect. First, retaining high-RFM-value segments strengthens the stability of subscription revenue and ensures a more predictable cash flow. Second, development and communication strategies aligned with the preferences of the three largest motivational groups are likely to yield a higher return on investment compared to smaller segments with limited market impact. Enhancing community connection points indirectly increases renewal likelihood, supporting longer subscriber lifecycles and higher revenue per user.

The following section summarizes concise, practical recommendations for developers and operators based on the conclusions drawn from this study.

Recommendations:

The following recommendations are derived directly from the patterns identified in the Results section. They are guided by two key considerations: first, how to most effectively increase renewal likelihood and long-term engagement within the three dominant motivational groups; and second, how to identify and target players with high RFM values. The proposed measures are divided into two categories: quick actions requiring limited resources and mid-term initiatives involving content development and community operations. For each recommendation, it is advisable to define specific measurement points and to repeat the RFM analysis periodically in order to track its impact on retention and revenue stability.

Content priorities based on dominant motivations: For Dreamers, world-building and narrative depth should remain the central focus of content design. For Collectors, stable motivation can be maintained through a system of attainable rewards, rare items, and collectible milestones. For Team Players, consistent maintenance of cooperative challenges, such as raids and dungeon ecosystems, supports renewal intent. Focusing on these three areas provides the broadest engagement coverage within the current player base.

Change strategy balancing innovation and stability: New content should be introduced in alignment with dominant player motivations while maintaining nostalgic appeal. Gradual, well-communicated updates are preferable to radical transformations, as they help reduce community resistance. Offering parallel content formats that cater to different experience profiles can allow both veteran and new audiences to coexist. Following the completion of this research, Blizzard implemented such an approach with the introduction of Classic and Remix modes.

Regular value measurement based on RFM: It is advisable to periodically repeat the RFM analysis so that the provider can track changes in the proportion of its most valuable subscriber groups. In future analyses, combining time series processing of RFM data with deep learning architectures may offer new opportunities for dynamic churn prediction (Vatani et al., 2024). Incorporating predictive modeling into the cyclical measurement of RFM increases the precision of retention interventions (Mulla et al., 2025). Around the recency component, it is recommended to schedule proactive renewal messages. Based on the monetary component, personalized offers can be provided to players who have previously spent voluntarily (Nielsen, 2025).

Expanding community presence and connection points: Strengthening the developers' presence on online platforms and organizing targeted offline events both enhance emotional attachment. These connection points not only enrich the social experience but also indirectly increase the likelihood of subscription renewal.

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Feedback loop and targeted testing: Before implementing major changes, focused pilot testing and structured feedback collection within specific player segments are recommended. This approach minimizes community backlash and reduces the risk of negative reception after the rollout.

Refining measurement for future research cycles: To further improve the methodology, it is advisable to record the precise dates and monthly frequency of transactions separately, as well as to distinguish optional spending from subscription fees. In motivational assessment, the current self-classification system could be complemented with a scaled, multi-item measurement instrument to capture finer nuances in player motivation.

SUMMARY AND FUTURE RESEARCH DIRECTIONS

The dual analytical approach of this study, combining the RFM and F models, provides a comprehensive understanding of player loyalty within World of Warcraft (WoW). The F model revealed a community structure dominated by world-oriented players, with the largest segment falling into this category. The predominance of Dreamers underscores the strategic importance of world-building and narrative arcs, while the strong presence of Collectors highlights the relevance of reward systems and rare items. Team Players contribute to the human-centered aspect of the community, emphasizing the need for sustained cooperative challenges and well-maintained raid and dungeon ecosystems. Smaller segments, such as Relationship Seekers, represent only a marginal share, offering a practical basis for development and resource allocation decisions. These patterns align closely with the game's structure and content offering and can be effectively interpreted through the lens of motivation-based loyalty building.

The RFM approach enabled segmentation based on player value. The scoring system produced a composite code ranging from 111 to 333. The Recency and Monetary components were derived from binary questions, while Frequency was measured across three categories. The bar chart showed a notably high proportion of players with maximum scores, providing the developer with immediately actionable insights for retention and targeted communication. When repeated periodically, the RFM model can serve as a feedback mechanism that tracks the financial dimensions of loyalty over time.

The analysis of community engagement revealed that players expect a more active community-building role from the developer. Respondents emphasized the importance of expanding offline events and strengthening online presence. While the financial impact of these actions is indirect, it can manifest through higher renewal rates and stronger brand loyalty. The large volume and constructive tone of the open-ended suggestions indicate that consciously expanding community touchpoints may play a significant role in sustaining long-term loyalty.

Balancing content updates and stability remains a delicate issue. Within the community's collective memory, the Cataclysm expansion serves as a negative reference point, illustrating the risks of drastic change in a player base where nostalgia forms part of collective identity. The coexistence of Classic and the newly introduced Remix versions suggests that Blizzard has sought to accommodate different player needs through parallel offerings, an approach aimed at retaining long-time users while attracting newcomers.

These findings have direct financial implications, even if not detailed in a separate section. Subscribers with high RFM values form the most stable revenue core, making the timing of proactive retention messages particularly effective when aligned with Recency signals. The Monetary component identifies players with higher spending potential, enabling personalized, behavior-consistent offers. Aligning content and experience design with the preferences of the three major motivational groups is likely to yield higher returns than targeting smaller segments. This logic provides operational value for proportional resource allocation and development prioritization.

The study's limitations stem from both its methodology and data collection context. Since the sample was drawn from community groups, it cannot be considered fully representative. The self-administered nature of the questionnaire means that motivational classification relied on self-perception. Several respondents found the motivational categories too rigid, suggesting the need for a more nuanced scale. Among the RFM components, Recency and Monetary were measured through

proxies, limiting financial precision. These constraints define the boundaries of the study's validity.

Several directions remain open for future research. It may be justified, for example, to examine separate churn models for monetizing and non-monetizing players, incorporating behavioral variability calculated over different time windows (Wu et al., 2025). It is advisable to record the exact date and monthly frequency of transactions and to treat additional spending separately from the subscription fee. This would make the financial interpretation of the monetary component more accurate. To refine the frequency component, comparing the number of monthly purchases with the number of active months per year could be useful. In measuring motivations, the current self-assessment approach should be complemented with validated multi-item scales. A deeper inclusion of qualitative techniques could help explore the topics that emerged in open-ended responses more comprehensively. It would also be worthwhile to investigate in more depth how audiovisual, content-based and interactive game elements contribute to long-term player retention across different segments (Divieiev & Grigaliūnaitė, 2024). Finally, it is recommended to longitudinally monitor the impact of parallel Classic and Remix-type content offerings and compare them with retention indicators so that the financial impact of content strategies can also be demonstrated quantitatively.

In conclusion, the World of Warcraft case study demonstrates how value-based segmentation and player motivation can be integrated within a subscription-based service. The combined use of the RFM and F models not only quantifies loyalty but also reveals its underlying structure. The practical insights can be directly applied to content design, community management, and subscription operations. Methodological refinements in future measurement cycles may further enhance decision-making accuracy and revenue predictability.

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