

Examining Gamified Fantasy Sport Engagement to Understand In-app Purchases

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(including questions)

A fantasy sport consumer spends \$556 per year fueling industry growth to a projected \$5.3 billion in 2021 (FSTA, 2019; Juniper Research 2016). As an increasing number of fantasy sports companies adopt mobile apps as the platform to reach customers, these applications implement gamified designs to impact engagement. Gamification is defined as “the use of game design elements in non-game contexts” (Deterding et al., 2011, p. 1). On average smartphone users spend 158 minutes daily on mobile applications, 32% of which is on gaming applications (Venture Beat, 2013). However, not all forms of engagement lead to in-app spending. Hence, the current study utilizes behavioral data from users of a fantasy football app to examine how gamification-related factors influence in-app purchases from a self-determination perspective.

Self-determination theory (SDT) posits that an individual’s subjective experience determines behavior (Ryan & Deci, 2008). Beyond intrinsic motivation, individuals can be motivated extrinsically through affordances, which provide opportunities for users to satisfy needs (Zhang, 2008), such as reward, fame, and social competition (Deci & Ryan, 2012). In the app consumption context, gamification including winning points, rewards, achievements, or gaining experience levels reflect such extrinsic factors, which correlate to psychological and behavioral outcomes of enjoyment and purchase intentions (Hamari et al., 2014). While existing literature has used SDT to explain the motivations of consumer engagement (Funk et al., 2012; Reeve, 2012; Meyer & Gagne, 2008) and identified different motivations to engage in mobile applications (Hamari & Koivisto, 2013; Dwyer et al., 2018), how gamified elements extrinsically influence actual purchase behavior remains unexplored. Specifically, this research empirically examines the relationship between a user’s sense of achievement from engaging in gamified elements of an app and subsequent in-app purchase behavior within a fantasy sport context.

Most fantasy sport applications have free features as well as paid features, which can be unlocked through in-app purchases. Within the current context, four gamified affordances and user performance were considered. The affordances were *challenger game reward* (instantaneous achievement the user gets from a one-on-one challenge), *manager game reward* (periodic achievements the user get from playing seasonal games), *experience level* (achievement the user gets for engaging in the app), and *game tutorials* (achievements the user gets for gaining knowledge of how to use the app). Notably, both winning experience and losing experience is gamified. For example, users get a funny badge or notification for losing three games in a row, which is designed to offset the frustration of losing games. Users’ *performance* of challenger games (i.e., the winning percentage) was used to contrast the effect of the gamified affordances with performance-based motivation. Behavioral data were provided by a developer of a fantasy football application to examine the relationship between in-app behavior and in-app purchases.

Logistic regression was applied using the R software on a sample of 4,475 app users, of which 551 were paying users with an average in-app spending of €57.77. The dependent variable was binary coded to study the likelihood of in-app purchases. Results revealed *periodic achievements* ($\beta = -0.276$), *instantaneous achievements* ($\beta = 0.062$), *gaining knowledge* ($\beta = 0.252$) and *experience level* ($\beta = 0.102$) were significant in explaining the likelihood of in-app purchase ($p < 0.001$), whereas *performance* ($\beta = -0.367$) was not significant ($p = 0.333$). Overall, users who engaged in knowledge acquisition to use the application were 28.6% more likely to make in-app purchases, users who gained instantaneous achievements were 6.5% more likely to make in-app purchases, and users who increased their experience levels were 10.7% more likely to make in-app purchases. However, users who gained periodic achievements were 24.2% less likely to make in-app purchases.

These findings contribute to the existing gamification literature by clarifying how extrinsic gamification elements influence purchase behavior (e.g., Jang, 2018). This research also adds to the knowledge of fantasy sports

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literature (Farquhar & Meeds, 2007; Dwyer et al., 2011) by highlighting a unique temporal effect of in app engagement related to learning activities within behavioral momentum theory (BMT). BMT suggest that behavior is determined by the rate of reinforcement present in a given situation (reward-reinforcer relationship) rather than the contingency of obtaining the reward (Nevin & Shahan, 2011). Results indicated that the accumulation of rewards lead to a higher tendency to purchase. Hence, the act of staying actively engaged in the pursuit of obtaining knowledge, achievements, and experience determines whether users make in-app purchases. Specifically, periodic episodes of winning or losing as a contingency become less important for purchasing than continuous engagement in gamified elements that lead to persistence of behavior. For example, obtaining periodic achievements by playing the game alone did not lead to purchase whereas obtaining instantaneous achievements by playing did.

Overall, results indicate the in app rewards generated from gamified elements have varying effects on consumers' purchase decision. In addition, the negative relationship of periodic achievements indicates users season-long engagement alone does not convert to purchase. Conversely, instantaneous and regular achievements coupled with the ego-enhancement by competing with others boosted purchase. Results further indicate the pronounced role of knowledge acquisition rewards in influencing purchase behavior. As the users increased knowledge and experience about the application and how to use it to engage and purchase, the more they made in-app purchases.

For mobile application organizations, these findings are relevant to increase the number of users making in-app purchases. The application developers should focus on gamifying the application so that users are extrinsically motivated (by winning rewards) in regular temporal intervals to stay engaged in the application, irrespective of their performance in the application. In addition, providing a reinforcement immediately after a losing episode could lead to purchases. Another step to increase in-app purchases is to encourage users of the application to engage in challenges related to social competition and develop levels within the application that gives users a sense of pride and accomplishment. The developers can also use gamified means to make users knowledgeable about the application and get them familiar with how to engage and purchase, to increase users' likelihood of making in-app purchases.