

**Title: Gamification via mobile applications: A longitudinal examination of its impact on
attitudinal loyalty and behavior toward a core service**

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Abstract

Organizations increasingly use gamification to engage with, and influence, consumers' attitudes and behaviors. In this study, we present findings from a longitudinal, mixed-method research design that (i) examined the extent to which game design elements created by a third-party app lead to increased attitudinal loyalty toward core service providers and (ii) sought to explain the underlying processes that invoke attitudinal change. Behavioral data collected from app users indicated that knowledge-focused affordances positively influenced consumer loyalty and explained 11.3% of the variance in attitudinal change. Follow-up interviews revealed that *Rewards*, *Competition*, *Sense of Achievement*, and *Gaining Knowledge* were representative of consumers' motives for using the app, and *Engagement* and *Identity* explained how using the gamified application influenced users' attitudinal loyalty toward the core service. Overall, we contribute to knowledge about how gamified affordances can be used to add value to consumer experiences, both in relation to the gamified consumption experiences, and the focal brand that is serviced by a third-party app.

Keywords: Gamification; Engagement; Loyalty; Mobile Application

Gamification via mobile applications: A longitudinal examination of its impact on attitudinal loyalty and behavior toward a core service

The proliferation of digital technologies designed to facilitate interaction and two-way flows of information have fueled investment in customer engagement. Organizations wishing to engage with customers (e.g., Brodie, Hollebeek, Biljana, & Ilic, 2011) seek to harness the power of digital media to communicate with current and potential customers (Verhoef, Reinartz, & Krafft, 2010). For example, organizations use social media platforms, or their own customized smart phone applications, to interact with customers in addition to the traditional purchase exchanges (e.g., Roggeveen & Grewal, 2016). These customer-brand interactions serve a variety of purposes for organizations, such as fostering positive sales outcomes and improving organizational performance – both of which reside “at the heart of retailing” (Grewal, Roggeveen, & Nordfält, 2017, p. 3).

Gamifying services is an increasingly popular way of generating engagement and enhancing consumer involvement. The participatory nature of digital media—and its focus on interactivity—provide key avenues through which customers can connect and produce value with organizations (e.g., Hennig-Thurau et al., 2010). As part of this, organizations use gamification to engage with consumers and motivate behaviors that align with organizational goals (Butcher, Sung, & Raynes-Goldie, 2019; Koivisto & Hamari, 2019; Yang, Asaad, & Dwivedi, 2017). Gamification features can manifest in many ways; however, popular examples include providing users with leaderboard rankings, feedback, points, challenges, and badges or rewards for completing tasks, such as liking a company on social media or by checking-in to a store (Hamari, Koivisto, & Sarsa, 2014). Given the ubiquity of smart phone ownership, mobile applications have emerged as a predominant method for gamifying consumer experiences.

GAMIFIED CONSUMER ENGAGEMENT

Gamification experiences are typically delivered by an organization directly to their consumers, or through third-party apps, such as Draftking (an application enabling users to predict results of American football games). Third-party apps typically include game mechanics that encourage behavioral usage and enhance consumer experiences of other services and brands (cf. Huotari & Hamari, 2017). Moreover, third-party app providers use game mechanics that are primarily beyond the control of the core service provider. Therefore, gamification choices are made by the third-party, whereas the digital (e.g., check-ins, recommendations), and physical outcomes (e.g., purchase of a meal or coffee) are shared by the gamification platform and the core service provider. Third-party apps that provide motivational affordances to engage with a core service are under-researched and offer promising avenues to develop existing knowledge of gamification and services marketing. To date, research into third-party apps has investigated users' experiences and consumption of the third-party (Frith, 2013, 2014), rather than exploring the consequences for core service providers.

We address this theoretical gap in two ways. First, we investigate the extent to which game design elements created by a third-party app influence attitudinal loyalty toward a core service. This contributes to existing theory that provides qualitative insights into user experiences of third-party apps, such as Foursquare (Frith, 2013, 2014), and evidence that app use drives consumer behaviors (e.g., Blohm & Leimeister, 2013; Hofacker et al., 2016; Zichermann & Cunningham, 2011). Second, we explore how third-party app usage leads to attitudinal changes toward a core service provider. In doing so, we capitalize on recent advocations for greater use of qualitative and mixed method research in studies of gamification (Alsawaier, 2019) to contribute theoretical explanations about how, and why, task and achievement-oriented affordances in third-party apps lead to attitude change in relation to other organizations.

We present findings derived from an explanatory mixed-method research design that benefits from strengths of quantitative and qualitative approaches (Bryman, 2006; Harrison & Reilly, 2011). Study 1 features a longitudinal quantitative analysis of self-reported measures of attitudinal loyalty in relation to a core service provider, and behavioral measures recorded by a third-party app that responds to calls for longitudinal investigations into the outcomes of gamification (Hofacker et al., 2016; Koivisto & Hamari, 2017; Seaborn & Fels, 2016). Study 2 is a follow-up qualitative interview study of app users that became more, or less, loyal to the core service provider (defined through the results of Study 1) as the result of third-party app usage to explain the underlying processes driving attitudinal change (Alsawaier, 2019; Huotari & Hamari, 2017). The mixed method explanatory design answers a call to go beyond the descriptive analyses often used in gamification research (cf. Koivisto & Hamari, 2019). Findings show that longitudinal change of attitudinal loyalty is influenced by achievement-oriented gamified affordances that foster knowledge and trigger identity formation processes.

Literature Review

Customer Engagement and Loyalty

Customer engagement – defined as “the level of a customer’s motivational, brand-related, and context-dependent state of mind characterized by specific levels of cognitive, emotional, and behavioral activity in brand interactions” (Hollebeek, 2011, p. 790) – has become a key focus for academics and organizations over the last three decades in response to the shifting focus that marketers have placed on relationship, rather than transactional, marketing (Berry, 1995; Bowden, 2009). Marketing scholars have studied customer engagement from multiple perspectives, assessing the cognitive, affective, and behavioral components of the construct both individually and in relation to one another (Brodie et al., 2011). Adopting a relationship

GAMIFIED CONSUMER ENGAGEMENT

marketing orientation necessitates that organizations include customers in ongoing exchanges, rather than short-term transactions (Gronroos, 2004; Gummerson, 1999). This long-term approach provides the opportunity to develop engaged customer bases by increasing the depth and breadth of contact a person has with an organization, and subsequently increasing overall profitability via customer lifetime value (Grönroos, 2017). Thus, organizations participate in customer engagement activities to develop customer relationships and subsequently increase business performance (Bowden, 2009).

Customer engagement has been linked to attitudinal outcomes including satisfaction, commitment, involvement, and trust (Bowden, 2009; Brodie et al., 2011; Pansari & Kumar, 2017; van Doorn et al., 2010). In an extensive effort to conceptualize customer engagement, Pansari and Kumar (2017) argue that engagement is the result of interactions between customers and brands, which foster trust and commitment. Thus, customer engagement is related to, yet distinct from loyalty, with the interactions between variables such as trust, satisfaction, commitment, and involvement mediating the extent to which an individual may become a habitual purchaser of a brand (Bowden, 2009). Engaged consumers, therefore, have an interest in the brand as well as some degree of emotional attachment (So, King, & Sparks, 2014; van Doorn et al., 2010) that drives the development of the customer-brand relationship and brand loyalty (cf. Brodie et al., 2011).

Loyalty is conceptualized as “a deeply held commitment to rebuy or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing” (Oliver, 1999, p.34). From this perspective, loyalty consists of both attitudinal and behavioral components. Customer engagement tactics are, therefore, designed to stimulate positive thoughts about a product or service, and to encourage consumers to use these attitudes in their decision-making. Effective customer engagement strategies target outcomes

GAMIFIED CONSUMER ENGAGEMENT

beyond those benefiting the organization (e.g., customer loyalty) and ensure that the customer also receives added value from the exchange (e.g., Kumar & Reinartz, 2016). The interactive and two-way communication options provided by digital platforms allow organizations to build in functionality that provides consumers with various forms of value (Leclercq, Hammedi, & Poncin, 2018). For example, organizations may reward customers for answering surveys with discount vouchers or with points that can be redeemed in-store. As such, consumers are incentivized to engage further with the organization, demonstrating how integrating gamification elements into a product or service offering can solicit improved engagement and subsequent loyalty from consumers (Hofacker et al., 2016).

Gamification

The gamification of service offerings is an effective means to improve customer engagement in today's highly digitized environment (Hofacker, De Ruyter, Lurie, Manchanda, & Donaldson, 2016; Jang, Kitchen, & Kim, 2018). Whilst gamification is defined in a range of contrasting ways (Seaborn & Fels, 2015), we frame this study in the services approach to gamification and, therefore, use Huotari and Hamari's (2017) conceptualization of gamification as the augmentation of services with gameful experiences to support users' overall value creation (Koivisto & Hamari, 2019). Many aspects of gamification are analogous to traditional loyalty program executions (e.g., earning airline miles or getting every fifth coffee purchased for free; see Kim & Ahn, 2017). Yet, the added social and motivational benefits that accompany gamified experiences make them distinctive in marketing terms (Blohm & Leimeister, 2013; Hofacker et al., 2016; Huotari & Hamari, 2012). Furthermore, there is a growing body of evidence illustrating that, when designed effectively (see Deterding, Dixon, Khaled, & Nacke, 2011), game-elements can drive value-creating behaviors, motivate customers, increase purchase behaviors, enhance

loyalty, and heighten consumers social standing in relation to peers (e.g., Blohm & Leimeister, 2013; Hofacker et al., 2016; Zichermann & Cunningham, 2011).

To be effective, gamified experiences need to incorporate elements that *afford* opportunities for customers to satisfy motivational needs (e.g., competition, learning; Zhang, 2008). Leaderboards, for example, afford opportunities for social comparison that drive customers to outperform other users (cf. Festinger, 1954). Likewise, game design elements that afford feedback or measure progress can engage achievement motives and drive users to achieve a pre-defined goal (e.g., setting a goal of taking 10,000 steps per day on a fitness application). When designed in a manner conducive to marketing objectives, such affordances can have profound implications for consumer behavior.

The relationship between affordances and motivation is complex and related to the subjective experiences of (a) individual users, and (b) the contexts in which gamification is applied (Deterding et al., 2011). Affordances can activate intrinsic or extrinsic motivations. Extrinsic motivations relate to tangible (e.g., financial), psychological (e.g., praise), or social (e.g., public recognition) rewards (Brown, 2007). While in terms of well-being, there is evidence that – over time – extrinsic motivation is not effective in fostering loyalty, studies on gamification demonstrate that game elements affording extrinsic motivations, such as feedback or praise, can lead to sustained behavior and the achievement of important intrinsic states (e.g., competence; Seaborn & Fels, 2015).

In contrast, intrinsic motivations, which can be explained by self-determination theory (SDT; Ryan & Deci, 2000), refers to individuals' psychological needs, and explain the choices individuals make without, or in relation to, the influence of extrinsic rewards (Deci, Koestner, & Ryan, 1999). In line with the SDT perspective, intrinsic motivation plays a crucial role in meaningful behavioral change because motivation and autonomy are a product of a consumer's

volition. Drawing extrinsic and intrinsic motivations together, gamification researchers (e.g., Deterding et al., 2011; Kim & Ahn, 2017; Mekler, Bruhlman, Tuch, & Opwis, 2017; Seaborn & Fels, 2015) have drawn heavily from SDT to understand how internally and externally focused game design elements afford feelings of autonomy, competence, and relatedness.

Research documenting the relationship between motivational affordances and user behavior (or intentions to behave) provides evidence about the efficacy of gamification practices. Existing research has tested a variety of affordances across diverse contexts (See Table 1; Koivisto & Hamari, 2019) and identified positive (e.g., Hamari, 2013, 2017; Yang et al., 2017) and negative effects on user behavior (e.g., Hanus & Fox, 2015). Most studies, however, have found that gamification positively impacts user engagement (Hamari et al., 2014). Furthermore, Jang et al. (2018) found, through a longitudinal study of the fitness industry, that gamification elements predict consumer purchase behaviors. Table 1 provides a broader analysis of previous studies in relation to the (a) game elements under focus, (b) research context, (c) study design, (d) sample characteristics, and (e) key findings.

Table 1: *Overview of related research*

Study	Game Element	Context	Design	Sample	Findings
Siemens, Smith, Fisher, Thyroff, & Killian, 2015	Status bars Building a character (unlocking parts)	Online and offline video games.	Experiments Study 1: 2x2 design: (status bar vs character building) x (private vs. public game). Study 2: Replication with in game advertising included.	Study 1: 88 participants Study 2: 78 participants	Across both studies, the public games were shown to elicit higher motivation in consumers. Respondents who had access to the character-building progress mechanism reported experiencing more enjoyment, effort, and flow than those respondents exposed to the status bar.
Hanus & Fox, 2015	Leader boards Badges	Education / Student course gamification.	Longitudinal experiment (four surveys). One student cohort took a course with gamified elements, whereas the other cohort took the same course without these elements.	80 participants	The gamified course cohort demonstrated less intrinsic motivation, less satisfaction, and less empowerment over time than the non-gamified course cohort. Additionally, the gamified course cohort achieved lower final exam scores than the non-gamified class.
Kuo & Chuang, 2016	Points Badges Leader boards Challenges in activities Rewards	Online context for Academic Promotion and Dissemination.	Cross sectional analysis of user perceptions of gamification strategy values.	73 participants	Graphical incentives (e.g., trophies, badges, and collectable cards), gamified thematic activities or web games, and discussion boards were the three most important factors impacting member retention and platform engagement.
Sailer, Hense, Mayr, & Mandl, 2017	Badges Leader boards Performance graphs Avatars Teammates Meaningful story	Hypothetical game simulating a storage depot	Cross-sectional Analyses of attitudinal data collected via online questionnaires.	419 participants	Badges, leaderboards, and performance graphs positively influenced competence, need satisfaction, and perceived task meaningfulness. Additionally, avatars, meaningful stories, and teammates influenced experiences of social relatedness.

GAMIFIED CONSUMER ENGAGEMENT

Kim & Ahn, 2017	Points Badges (Stars) Loyalty Program Rewards	Retail loyalty program experiments (Starbucks).	Two online experiments Study 1: Two-group test (salient, controlling reward vs. nonsalient autonomy-supportive rewards. Study 2: 2x2 between subjects design (salient, controlling reward vs. nonsalient autonomy supportive-reward) x (feedback vs. no feedback).	Study 1: 205 participants Study 2: 111 participants	Participants promised rewards that had an element of choice, no deadline of achievement, and less specific requirements (Group 1) reported higher intrinsic motivation to use the loyalty program than respondents in Group 2. Group 2 participants were promised a fixed reward, a deadline of achievement and explicit requirements. Intrinsic motivations for Group 2 were enhanced when they were given verbal feedback which acknowledged their effort to gain points.
Mekler, Bruhlmann, Tuch, & Opwis, 2017	Points Levels Leader boards	Image annotation tasks	Online experiment 2 x 4 design: (Points vs. leaderboards vs. levels vs. control group) x (autonomy vs. control orientated) Tag number, tag quality and intrinsic motivation, and satisfaction of autonomy and competence needs were dependent variables.	273 participants	Gamified elements did not significantly influence competence or intrinsic motivations. However; levels, leader boards and to a lesser extent points, resulted in a significantly higher amount of hashtags being generated. These elements acted as extrinsic rewards encouraging performance quantity.
Hamari, 2017	Badges	Online sharing economy (Sharetribe)	2 year between-group field experiment,	2,989 participants	The gamified condition group (N = 1579) were more likely to post trade proposals, transact, comment on proposals, and use the service more frequently than the non-gamified group.
Jang, Kitchen, & Kim, 2018	Points Badges Social Interaction	Exercise / Fitness	Longitudinal Econometric analyses of behavioral data provided by the platform developer over three years.	5,072 participants	Epistemic, social benefits, and achievement benefits predicted engagement and purchase, with higher importance of epistemic and achievement benefits to older and less experienced customers. Social integrative benefits were more important to younger and experienced customers.

GAMIFIED CONSUMER ENGAGEMENT

Leclercq, Hammedi, & Poncin, 2018	Contests Competition Cooperation	Co-creation communities (e.g., naming a new product)	3 laboratory 1 field experiment		Success and failure conditions weakened the benefits of gamification. Negative impacts on customer experience and engagement emerged in cases where participants lost competitions. However, a participant's extent of prior engagement with the community moderated the negative impacts linked with losing a competition.
			Study 1: 2x2 design (presence vs. absence of cooperation) x (presence vs. absence of completion)	Study 1: 160 participants.	
			Study 2: 2x2 design (winning a contest designed with cooperation vs. without) x (winning a contest with competition vs. without).	Study 2: 160 participants.	
			Study 3: 2x2 design (losing a contest designed with cooperation vs. without) x (losing a contest with competition vs. without).	Study 3: 160 participants.	
Mitchell, Schuster, & Jin, 2020	No specific game elements monitored. Respondents asked to consider a gamified app they use.	Workplace gamification.	Study 4: 3 groups, competition driven, cooperation driven and control	Study 4: 92 participants.	Internalized extrinsic motivations positively influenced needs satisfaction, intrinsic motivation, and behavioral intention.
			Cross sectional survey	291 participants	

Recent conceptualizations have combined theories of game design and service dominant logic (Huotari & Hamari, 2017) to provide a foundation for the design of affordances that motivate behavior and create value in use for consumers (e.g., Sandström, Edvardsson, & Kristensson, 2008). The focus on service providers that enhance user value creation through affordances for gameful experiences incorporates the idea that gamification may, or may not, be created by the core-service provider. The augmented functionalities of mobile devices in general, and their applications in particular, has provided marketers and game designers with opportunities to target a broader range of touch points during the consumer experience with game elements that afford certain consumer motivations through the inclusion of, for example, points, badges, progress bars, coupons and leaderboards (see Hamari et al., 2014; Seaborn & Fels, 2015). Building on the findings presented in Table 1, there is an opportunity to examine the effectiveness of gamification in driving attitude change in relation to specific service offerings (Hofacker et al., 2016) and to investigate the influence of game elements being introduced to consumers via third-party apps.

Third-party apps

The proliferation of digital media broadly, and app use specifically, has resulted in third-party organizations gamifying consumers' interest in brands (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011). Yet, evidence in relation to the influence of third-party apps delivering game elements and affordances has received less attention in gamification research. In a qualitative study of Foursquare users, Frith (2013, p. 258) observed that the status and identity-based elements of the platform can "spur and reward usage". Frith (2013) argues that, by

acquiring status (e.g., Mayorships), users construct a game-based identity that is projected to others app users. Similarly, users' decision to check-in on the app were closely related to the audiences that viewed this information on the service (Cramer, Rost, & Holmquist, 2011). In other words, the gamified elements of the app motivated users to engage in behaviors toward Foursquare as well as local restaurants and venues (Frith, 2014). In another study, Gummerus, Liljander, Weman, and Pihlstrom (2012), found that customers received social, economic, and entertainment benefits by way of their involvement in online Facebook communities related to a given brand, such as Harley Davidson. Therefore, participation in context-specific gamification should enhance attitudinal connection with the core service, even if the service is provided by a third-party (Brodie et al., 2011; Hollebeek, 2011; Pansari & Kumar, 2011; Roggeveen & Grewal, 2016). The following research question guides the hypothesis development section.

Research Question 1: *How do affordances on a third-party platform impact consumer loyalty toward the core service?*

Hypothesis development

Affordances require the user to complete specific tasks. The following hypotheses related to third-party apps are developed based on knowledge deriving from studies that focused on examining apps developed by a core service. Therefore, the goals of the app could be tailored to objectives of the organization in question. For example, desirable user behaviors can be rewarded with points (Jang et al., 2018). In a third-party app, users are rewarded with points for completing a task (i.e., task-oriented affordances), such as checking-in to a location (Frith, 2014). Awarding points allows users to monitor their progress and compare performance in the third-party app, which in the case of Foursquare might include consumption of various core service providers. Siemens et al. (2015) found that users who actively followed a character-building progress

mechanism on a platform reported experiencing more enjoyment, effort, and flow than a group that were exposed to progress passively, via a status bar. Similarly, affordances that require users to complete specific tasks have been shown to increase subsequent activity on an image tagging platform (Mekler et al., 2017). While the main benefit of task-oriented affordances are points that provide users with benefits associated with the third-party app (e.g., increased app usage), these task-oriented affordances are not associated with the core service and, therefore, are unlikely to impact consumer loyalty toward the core service. Thus, we propose in *Hypothesis 1*:

Hypothesis 1: *Completion of task-oriented affordances on a third-party platform will not lead to a significant positive increase in consumer loyalty toward the core service.*

Achievement-oriented affordances have user benefits beyond gaining points on the third-party app. For example, in contrast to task-oriented affordances (e.g., Frith, 2014), users are required to perform an action in a particular way, such as answering trivia questions correctly. Correct task completion may afford increases in users knowledge, sense of achievement (Seaborn & Fels, 2015), social status (Frith, 2013), or entertainment (Gummerus et al., 2012). These benefits are associated with the third-party app (e.g., users gain points that can be redeemed) and the core service (e.g., users gain knowledge about a core service). As such, achievement-oriented affordances are likely to impact user loyalty, and thus should influence attitudinal connection with the core service (c.f., Brodie et al., 2011; Hollebeek, 2011; Roggeveen & Grewal, 2016). Thus, we propose in *Hypothesis 2*:

Hypothesis 2: *Completion of achievement-oriented activities on a third-party platform will lead to a significant positive increase in consumer loyalty toward the core service.*

While the completion of achievement-oriented affordances may provide benefits like gaining knowledge, being challenged, or being entertained (Gummerus et al., 2012; Seaborn & Fels, 2015), success is a significant motivator for users to engage in gamified apps, such as fantasy sport (Weiner & Dwyer, 2017). Success appeals to users' social need for competition and competence, and thus motivates users who are naturally competitive (Weiser et al., 2015). Thus, users who have a high success rate in competitive tasks gain increased benefits associated with social status (Frith, 2013) and a sense of achievement (Seaborn & Fels, 2015). Consequently, we propose in *Hypothesis 3*:

Hypothesis 3: *Success in achievement-oriented activities on a third-party platform will lead to a significant positive increase in consumer loyalty toward the core service.*

Research Context and Overview of Studies

We collected data from users of a gamified mobile application (app) for football (i.e., soccer) fans of German clubs from the country's elite level league (Bundesliga) through to lower leagues. This provided an ideal context to examine a community of consumers focused on high-involvement brands, like Apple, Marvel, or Mercedes. The app featured the following motivational affordances: quizzes, TV check-in, stadium check-in, predicting games, leaderboard, and a prize raffle for weekly winners. Users were given the ability to answer, and potentially earn points from, five quiz questions per hour for free. In addition, users could make in-app purchases including replenishing their quiz questions without waiting and accessing points boosters which increased the value of answering quiz questions correctly. Users' points can be

GAMIFIED CONSUMER ENGAGEMENT

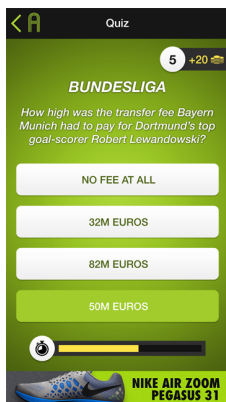
converted to prizes or discounts for sponsors' products, such as match tickets or signed jerseys.

Table 2 provides an overview of the gamified application.

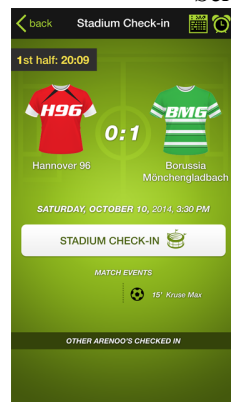
Table 2: *Overview of gamified application*

Affordance	Description	Points	Motivation / outcome
Quiz	Users answer football quiz questions. Each question has four possible answers. Questions expire after 10 seconds. Five questions per 60 minutes are free.	10 points per correct answer.	Need for Knowledge (epistemic benefit)
TV check-in	Users check-in while a game is live. Once users have checked-in, they cannot check-in on another game that is live simultaneously.	30 points per check-in.	Extrinsic – gain points
Stadium check-in	Users check-in when they are at the stadium. This check-in is geo-fenced with the coordinates of each stadium.	300 points per check-in	Extrinsic – gain points
Predicting games	Users predict the game outcome before each game starts. There is no limit on the number of games users can predict per game day.	20 points per correct direction (win, loss, draw) plus 20 points per correct score.	Achievement testing knowledge
Outcomes			
Leaderboard	Users are ranked on the overall leaderboard for day, week, and month; competing with all other app users. Users are also ranked on the leaderboard of each team; competing with other fans of the same team. Users' points are aggregated and count toward the points of each team.	NA	Achievement social benefit
Badges	Users receive badges for completing actions within the app, such as predicting the first match correctly.	NA	Achievement social benefit
Prizes	The User with the most points per day is highlighted and entered in a raffle to win the weekly prize.	NA	Extrinsic – Competence

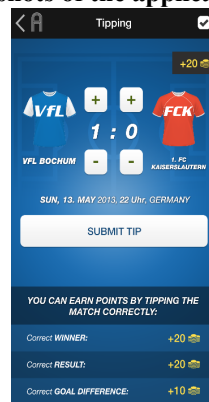
Screenshots of the application



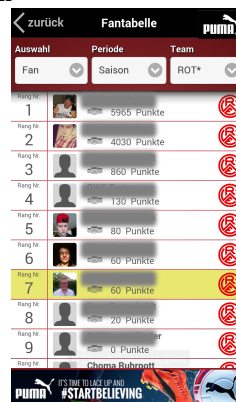
Quiz



Check-in



Predicting



Leaderboard



Prizes

Note: Names and Faces have been blurred out to protect the identity of app users.

While the context of this research was focused on a sport engagement app, the gamified elements (e.g., knowledge generation and testing via quiz questions and game predictions; social proof via a leaderboard; and driving desired behavior, such as checking-in at stadiums) are applicable to other high involvement retail contexts. In addition, access to user data relies on researcher access. Consequently, we selected the app because (a) it related to a high-involvement service context that has parallels with other high involvement consumption settings, such as entertainment (b) due to pragmatic concerns around researcher access, which allowed us to conduct a longitudinal analysis of the key study aims.

We used an explanatory mixed method research design (Bryman, 2006) to address the purpose of this research, and this process is depicted in Figure 1. This design followed recommendations to combine quantitative and qualitative data sources (Alsawaier, 2019) and used qualitative methods to add depth to quantitative observations and offset limitations associated with each (Johnson & Onwuegbuzie, 2004). In Study 1, we collected longitudinal data from a third-party app to measure changes in consumer attitude and behavior toward a core service. Users' in-app behavioral data was provided by the developer of the app. The dataset included de-identified records of users' activity in the app over the course of one season ranging from August to May the following year. During the sign-up process of the app, users selected their favorite team and indicated their degree of fandom for a team. At the end of the season (after a one-month cooling-off period), users received an in-app pop-up priming them to enter their level of fandom again. In Study 2, we conducted semi-structured interviews with users who responded to the in-app pop-up message. This study sought to explore why users' attitudes had changed following third-party app use.

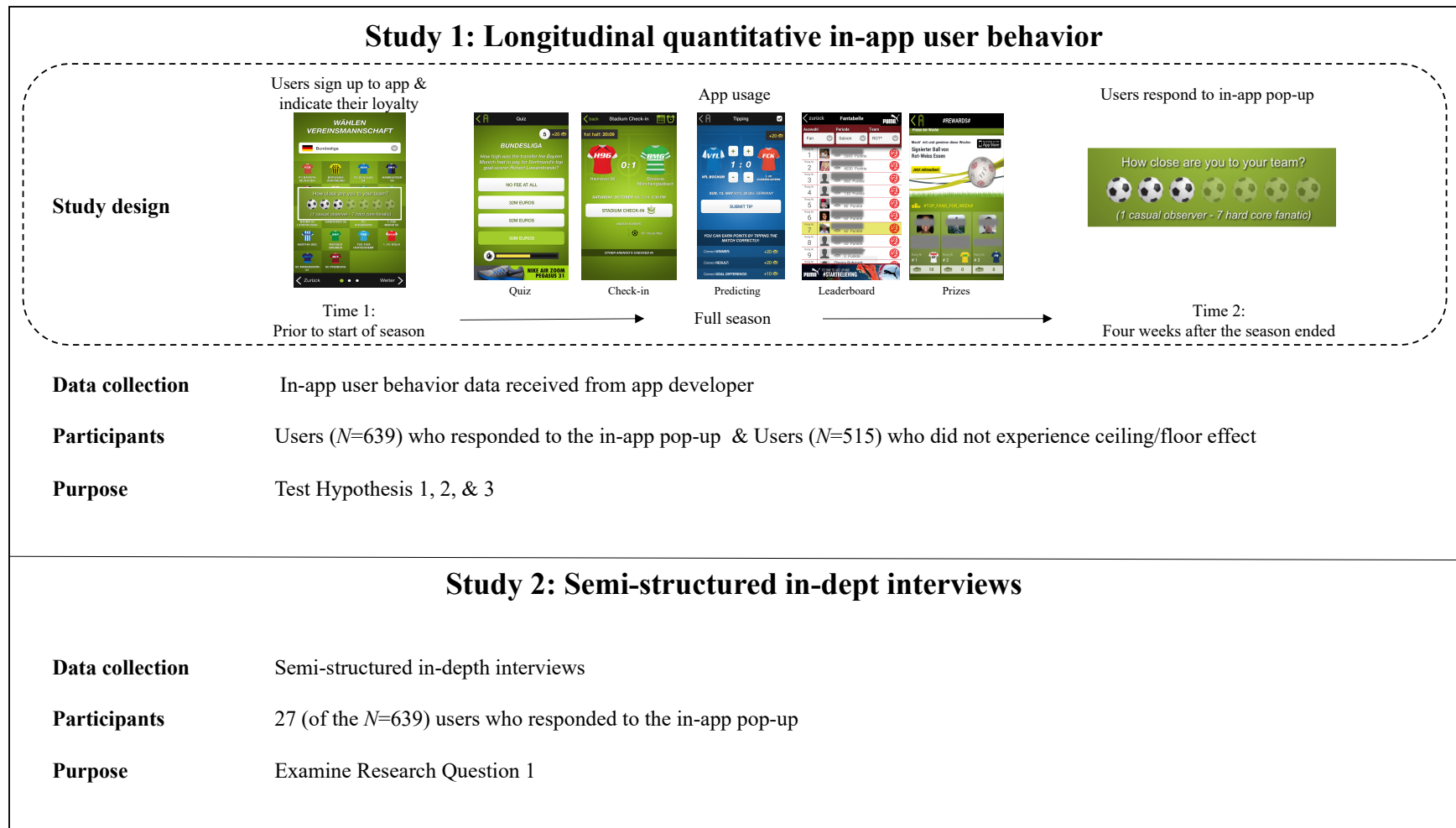


Figure 1: Overview of Studies and Research Design

Study 1

Methods

To address the three hypotheses, we collected data from 639 users who responded to the in-app pop-up message, representing 9.1% of the app user-base ($N = 6953$). The sample was largely representative of the app user base: participants were on average 31.9 years old ($SD = 9.76$ years), male (89.4%). Age, gender, and platform were shared by the app developer and used as control variables in the subsequent analyses to mitigate for confounding effects that may have influenced the key relationships under investigation. Six independent variables captured the three hypothesized gamification affordances. The number of TV check-ins and the number of stadium check-ins represent task-oriented affordances proposed in Hypothesis 1. The number of game outcome predictions and the number of quizzes represent *achievement-oriented activities* proposed in Hypothesis 2. The prediction accuracy and quiz accuracy represent *success in achievement-oriented activities*. The dependent variable reflecting attitudinal loyalty was self-reported. Users indicated their degree of team fandom on a seven-point Likert scale ranging from “Casual observer [1]” to “Hardcore fanatic [7]”. The item is widely used in the sport industry as it provides a concise and theoretically robust measurement of the connection between fans and sport teams (e.g., Na, Su, & Kunkel, 2019). For example, leagues and teams use the item in their fan surveys, and Ticketmaster uses it during the check-out process of a ticket purchase in some countries. Therefore, it was used as a proxy to conceptualize and represent attitudinal loyalty.

Analysis and Results

Descriptive statistics indicate that participants had a high level of attitudinal loyalty ($M = 4.58$; $SD = 1.42$) at Time 1. On average, users predicted 32.55 games ($SD = 111.25$) with an

GAMIFIED CONSUMER ENGAGEMENT

accuracy of 44.90% ($SD = 13.80$), answered an average of 20.91 quiz questions ($SD = 52.29$) with an accuracy of 45.43% ($SD = 25.52$), checked-in on television 1.08 times ($SD = 10.11$), and checked-in at the stadium 0.03 times ($SD = 0.39$).

Paired-sample t -tests from Time 1 to Time 2 indicate a significant change in respondents' attitudinal loyalty mean score ($t(639) = 12.84$; $p < .001$) from 5.04 ($SD = 1.60$) to 5.42 ($SD = 1.62$) representing a mean score increase of .37 ($SD = .74$). Results are visually presented in Figure 2. We conducted a subsequent stepwise linear regression analysis with the three control variables included in step 1, and the four engagement activities and the two accuracy variables as the independent variables in step 2. The difference in loyalty between Time 1 and Time 2 revealed a significant effect ($F(4, 632) = 3.306$, $p < .004$) explaining 5% of the variance of respondents' increased loyalty. Results are presented in Table 3 and show that the number of quiz questions answered had a significant positive relationship with attitudinal loyalty change.

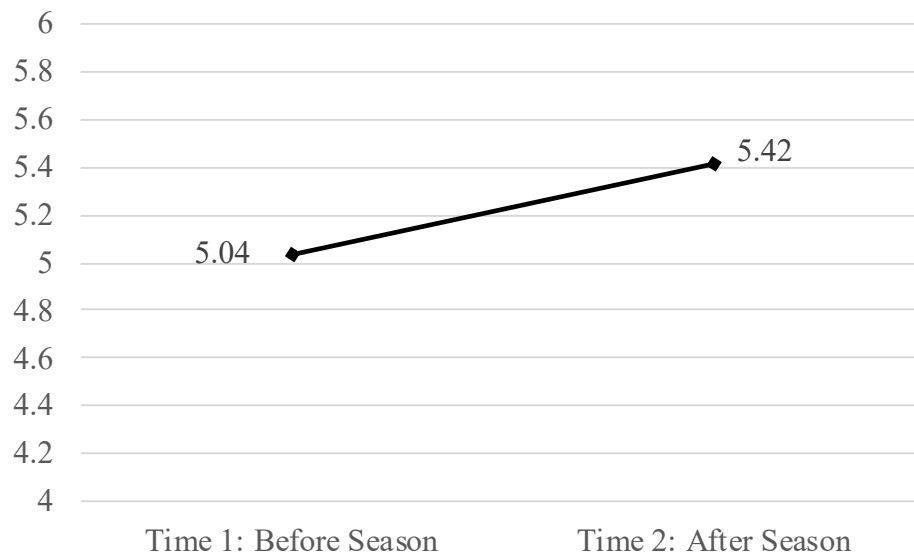


Figure 2: Change in attitudinal loyalty from pre to post season for all users ($N = 639$)

Table 3: Linear regression analysis predicting users' change of attitudinal loyalty ($N = 639$)

Model	<i>B</i>	SEB	β	<i>t</i> -value	<i>p</i>	<i>R</i>	adj. <i>R</i> ²
						.267	.052
Step 1: Control Variables							
Age			-.007	-.106	.916		
Gender			.040	.641	.522		
Platform			-.062	-.991	.322		
Step 2: Independent Variables							
Number of TV check-ins	.047	.002	.036	.606	.545		
Number of stadium check-ins	.001	.003	.022	.326	.745		
Number of predictions	.030	.000	.036	.499	.618		
Number of quizzes	.002	.001	.177	2.543	.012		
Prediction accuracy	.002	.002	.061	1.005	.316		
Quiz accuracy	.003	.001	.106	1.710	.088		
Constant	.030	.121		2.791	.005		
<i>F</i> (6, 632) = 3.306, <i>p</i> = .004							
Gender: 1 = male; 2 = female							
Platform: 1 = iOS; 2 = Android							

Twenty-four (3.7%) respondents reported decreased loyalty, 402 (63%) remained unchanged, and 213 (33.3%) increased. However, 124 respondents experienced ceiling or floor effects (i.e., initially indicating their level of fandom as a “1” or “7” on the 7-point Likert scale), which rendered them unable to document increased/decreased loyalty; subsequently, they were deleted from the following analyses. Of the remaining 515 respondents, 11 (2%) respondents reported decreased loyalty, 292 (56.7%) remained unchanged, and 213 (41.3%) reported increased loyalty. Paired-sample *t*-tests indicate a significant change in respondents' loyalty mean score ($t(515) = 15.05$; $p < .001$) from 4.58 ($SD = 1.42$) to 5.08 ($SD = 1.611$) representing a mean score increase of .50 ($SD = .68$). Results are visually presented in Figure 3. Stepwise linear regression analysis with the three control variables in Step 1, and the four engagement activities

GAMIFIED CONSUMER ENGAGEMENT

and the two accuracy variables as the independent variables in Step 2; the difference in loyalty between Time 1 and Time 2 revealed a significant effect ($F(6, 509) = 11.90, p < .001$) explaining 11.3% of the variance of respondents' changed loyalty. Results are presented in Table 4 and show that the number of game predictions and the number of quiz questions answered had a significant positive relationship with loyalty change. These findings support *Hypothesis 1*, as the completion of task-oriented affordances did not lead to a significant positive increase of consumer loyalty toward the core service. *Hypothesis 2*, was also supported as the completion of achievement-oriented activities led to a significant positive increase of consumer loyalty toward the core service. However, *Hypothesis 3* was not supported as success in achievement-oriented game elements did not lead to a significant positive increase in consumer loyalty toward the core service.

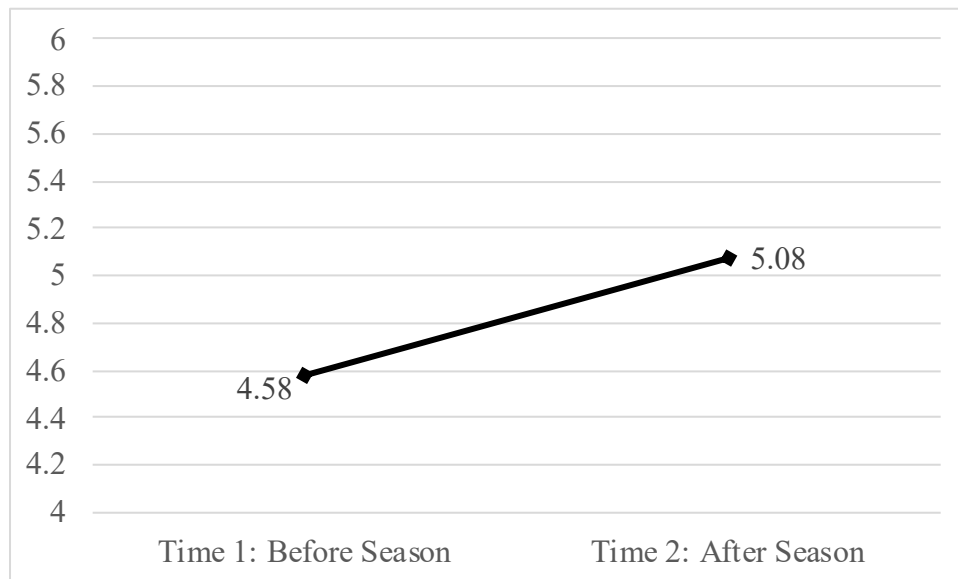


Figure 3: Change in attitudinal loyalty from pre to post season for all users who did not experience the ceiling effect ($N = 515$)

Table 4: Linear regression analysis predicting users' change of attitudinal loyalty ($N = 516$)

Model	<i>B</i>	SEB	β	<i>t</i> -value	<i>p</i>	<i>R</i>	adj. <i>R</i> ²
						.351	.113
Step 1: Control Variables							
Age			-.002	-.053	.958		
Gender			.056	1.325	.186		
Platform			-.013	-.303	.762		
Step 2: Independent Variables							
Number of TV check-ins	.101	.079	.053	1.270	.205		
Number of stadium check-ins	-.004	.003	-.052	-1.116	.265		
Number of predictions	.001	.000	.121	2.448	.015		.039
Number of quizzes	.004	.001	.267	5.687	.000		.074
Prediction accuracy	.001	.002	.032	.773	.440		
Quiz accuracy	.002	.001	.056	1.316	.189		
Constant	.262	.094		2.791	.005		
<i>F</i> (6, 509) = 11.90, $p < .001$							
Gender: 1 = male; 2 = female							
Platform: 1 = iOS; 2 = Android							
The <i>R</i> ² value corresponding to the independent variable indicates the <i>R</i> ² change caused by this variable with significant <i>F</i> -change values $p < .05$.							

Study 2

Gamified mobile apps may afford both extrinsic and intrinsic motivations (Seaborn & Fels, 2015). Moreover, the delivery of game design elements through contextually specific apps (e.g., FitBit) allow brands to interact with customers in carefully constructed engagement sites (Roggeveen & Grewal, 2016). Research related to fantasy sport indicates that both intrinsic and extrinsic motives influence consumer behavior (Dwyer & Kim, 2011). For example, social interaction, entertainment/escape, and competition influence individuals' fantasy sport consumption behavior and may also motivate individuals to consume gamified apps. Despite the

growing use of gamified loyalty programs via mobile apps, empirical research on the motives that drive their consumption as well as their influence on driving consumer loyalty with the brand remains limited. Research investigating the customer-side benefits of mobile application and how these benefits influence customer satisfaction and purchase intentions (Alnawas & Alburub, 2016) identified four categories of benefits: learning (e.g., becoming more knowledgeable or informed about the organization or their product/service), social integration (e.g., feelings of connectedness with other users), personal integration (e.g., enhancing one's confidence and status as a customer) and hedonic (e.g., feelings of pleasure, fun and being rewarded). Learning and hedonic benefits were found to influence customer satisfaction and purchase intentions, providing marketers with an increased sense of the types of marketing messages that are effective when placed within the mobile application space. Collectively, the existing literature and the findings of Study 1 prompted the following research question:

Research Question 2: Why are certain affordances effective in enhancing users' attitudinal loyalty toward the core service?

Method

Study 2 was designed to add depth and explanations about the underlying psychological mechanisms that makes sense of why gamification affordances led to a general increase in attitudinal loyalty in Study 1. In Study 2, we collected qualitative data from the participants from Study 1 to add a level of explanatory depth to our findings (Alsawaier, 2019). Adopting a longitudinal approach enabled us to better control the research process and answer calls from the literature to extend findings produced from snapshot research (Hofacker et al., 2016). Invitations to participate in the research were sent to email addresses of users who responded to the in-app pop-up prompting them to update their loyalty score in Study 1. Data were collected via in-depth

phone interviews with users of the app after the season. A semi-structured approach and interview guide were utilized to explore the experiences and perceptions of each respondent (Creswell, 2009). In total, 27 interviews were conducted with 16 users who increased their loyalty level over the course of the season (users 1–16), nine users who remained unchanged (users 17–25), and two users who reported that their loyalty level decreased (users 26–27). The sample's demographic characteristics reflected those reported by participants in Study 1; participants included two female participants (7.4%) and 25 male participants with an average age of 30.4 years.

Interviews were focused on understanding why certain affordances are effective in enhancing users' attitudinal loyalty toward the core service (i.e., their favorite team). For example, one question asked, "What were the key factors that motivated you to use the app?" Following the semi-structured process, probing questions were then deployed to prompt respondents to elaborate on their experiences (e.g., "Why did that motivate you to use the app?" or "Can you give me an example of how this impacted your app usage?"). These questions were intentionally broad, given the exploratory nature of the research, to ensure that respondents were not restricted in recounting their experiences.

Analysis

Data analysis followed Neumann's (2003) three-round coding sequence. In the first sequence, open coding, the lead researcher examined the data to locate common themes that motivated app use and how the app influenced their connection to the team. Themes were identified when words, phrases or concepts were used repeatedly and addressed a shared concept (Miles & Huberman, 1994). Initial codes were assigned to the located themes to condense the data and codebook was developed that contained the identified themes with direct quotes

representing each theme (cf. Ryan & Bernard, 2000). The initial phase of coding was completed by one member of the research team, and a second researcher provided qualitative feedback on the codebook and identified themes. After a discussion between the researcher team, the revised codebook was used as a guide to review the initial codes. In the second sequence, axial coding, the first researcher examined the data a second time and recoded the initial codes into the themes listed in the revised codebook. Subsequently, the second researcher used the revised codebook as a guide to code the data. The inter-coder reliability of the two researchers after the axial coding sequence was calculated using Perreault and Leigh's (1989) index of reliability. Differences in coding were resolved through discussions and consultation with a third academic who is an expert in consumer engagement research (cf. Bryman, 2008). In the third sequence, selective coding, the first researcher looked for relationships and abstract meanings in the themes identified (Strauss & Corbin, 1998) to offer explanations about why user attitudes to a core service changed as the result of third-party app use. Interview results were sent to respondents to confirm they reflected their intended meaning and ensure validity (Bryman, 2008).

Results

Qualitative data analysis uncovered six themes. Of these six themes, four themes – *Rewards*, *Competition*, *Sense of Achievement*, and *Gaining Knowledge* – reflected consumers' motives for using the app, and the remaining two themes – *Engagement* and *Identity* – highlighted how usage of the gamified application influenced the users' attitudinal loyalty toward the core service. The total number of times each theme was mentioned, the number of mentions and percentage of mentions for respondents who either increased or did not increase their attitudinal loyalty, and the index of reliability (Perreault & Leigh, 1989) for the coding are

presented in Table 5. In Table 6, the themes are presented with a description and representative quotes to provide context and meaning (Rinehart, 2005).

Table 5: *Identified themes and coding reliability*

Theme	# of mentions	Sample (n=16) with increased loyalty	Sample (n = 11) without increase loyalty	Index of Reliability
Rewards	22	13 (81%)	9 (81%)	.910
Competition	17	10 (63%)	7 (63%)	.840
Sense of Achievement	16	10 (63%)	5 (54%)	.875
Gaining Knowledge	12	9 (56%)	3 (27%)	.889
Total	67	42	25	.878
Engagement	19	12 (75%)	7 (63%)	.895
Identity	11	7 (50%)	4 (27%)	.879
Total	30	19	11	.887

Table 6: *Identified themes, description, and representative quotes*

Theme	Description	Representative Quotes
<i>Rewards</i>	Users being motivated to engage with the app by the weekly prizes that are distributed to users with high scores.	<p>The 300 points on the weekend for checking-in at the stadium were crucial to win the weekly prize. [I am] definitely happy with my Dante t-shirt.</p> <p>I was able to take the lead of the fan table about 10 minutes before the end of the day through the Quiz. [This meant I was rewarded with a] \$50 voucher in the bag – it doesn't get any better.</p>
<i>Competition</i>	Users being motivated to engage with the app by the competition with other fans.	<p>You can see how you rank against other fans of the same team and other teams, creating some friendly competition.</p> <p>The app allows fans to engage with their team in many different ways and I love the idea of competing against other fans to see who is number one.</p>
<i>Gaining Knowledge</i>	Users being motivated to engage with the app by	The app is interesting because I was able to learn about the Bundesliga history and related events

	the ability to gain new knowledge about the league and its teams.	with the quizzes and predicting game results helped me increase my knowledge of the sport of football in general.
		I like that you can test your knowledge about your favorite club and league and learn more about each. The app definitely made me want to get to know more about other teams.
<i>Sense of Achievement</i>	Users being motivated to engage with the app by feedback that triggers a sense of achievement, such as being correct or receiving badges and prizes.	<p>I really enjoyed the feedback the app gave when you would guess [a game result or quiz question] correctly.</p> <p>It is a great feeling when you get a notification saying you gained 60 points for correctly predicting the outcome of games.</p>
<i>Engagement</i>	Interaction within the app influencing individuals' engagement with the core service.	<p>I would say that the app had an influence on my loyalty over the course of the season. I definitely followed the team in a different way.</p> <p>When you engage with something on a daily basis [using the app], you will get more sucked-in emotionally as well. The app gives me something to do when I am bored or have a break – I just play it for a bit and get some news, learn some cool facts, and sometimes even predict a game result right.</p>
<i>Identity</i>	Interaction within the app influencing individuals' group position in relation to their peers and identity with the core service.	<p>“I think competing for <team> on the leaderboard [and] comparing myself to other fans, I became a stronger <team> fan. It's like I am on the team, just on their virtual team, not the one on the pitch, although that would be even better.”</p> <p>“When I compete against my friends, I can show them that I know more about the <team> than they do. That's definitely a good feeling, and shows that I am a real fan.”</p>

Discussion

The present research findings outline how engagement with game elements offered by a third-party app influences attitudinal loyalty toward a core service. Specifically, these insights

GAMIFIED CONSUMER ENGAGEMENT

gained from longitudinal and mixed-method data respond to calls in the literature for empirical evidence documenting how gamification operates within a business context (Koivisto & Hamari, 2019), the effects of gamified engagement over time (Hofacker et al., 2016; Seaborn & Fels, 2016), and the influence of gamification on attitudinal loyalty over time combining quantitative and qualitative data sources (Alsawaier, 2019). Overall, we demonstrate that the integration of specific gamified elements can encourage consumers to engage with third-party applications and positively augment users attitudinal loyalty toward core services.

Users reported higher attitudinal loyalty toward their favorite teams after the season (post-season measurement) than before the season (pre-season measurement). Supporting *Hypothesis 1*, we find that affordances requiring users to complete task-oriented activities, such as checking-in at a location, did not impact users' loyalty toward the core service. Although users gained points for completing the task and would have received benefits in the third-party app (e.g., competing for weekly prizes) task-oriented activities did not lead to benefits directly associated with the core service.

Supporting *Hypothesis 2*, we find that completing achievement-oriented activities that influence knowledge about, and identification with the core service (e.g., quizzes and result predictions), had a positive relationship with attitudinal loyalty in Study 1. The explanatory qualitative findings from Study 2 explain the benefits of third-party app usage that impacted users attitudinal loyalty toward the core service. Users that increased their attitudinal loyalty toward the core service mentioned knowledge generation and identity benefits more often than other users.

Interestingly, *Hypothesis 3* was not supported. Success in achievement-oriented activities did not lead to a significant positive increase in consumer loyalty toward the core service. Collectively, these findings indicate that affordances which provide benefits on the third-party

app, such as social status (Frith, 2013) or a sense of achievement (Seaborn & Fels, 2015), may be important motivators to keep users engaged in third-party apps (cf. Weiner & Dwyer, 2017).

However, the benefits do not necessarily transfer to the core service. Collectively, these insights indicate that core service providers are more likely to reap the benefits of their customers using a third-party app, when the affordances offered generate knowledge or impact users' identity.

These findings extend our theoretical knowledge of the value of gamification via third-party applications.

Two main contributions to theory emanate from this work. First, we have presented evidence that gamification plays a significant role in providing added value to consumers (e.g., Huotari & Hamari, 2017; Koivisto & Hamari, 2019). Additionally, we document how this can occur via digital media channels like mobile applications (e.g., Alsawaier, 2019; Hennig-Thurau et al., 2010). These findings show that gamified third-party applications can produce value for service providers and users (e.g., Hofacker et al., 2016; Leclercq et al., 2018) by positioning such platforms as a valuable channel to engage in relationship marketing (Gronroos, 2004; Gummerson, 1999; Grönroos, 2017). Thus, through this research we both confirm prior work positing that gamification can positively impact consumer engagement (Hamari et al., 2014; Hofacker et al., 2016; Jang et al., 2018; Yang et al., 2017) and extend this to demonstrate how such effects may manifest when the focal app is operated by a third-party.

Second, the present research contributes knowledge about the underlying processes that explain how gamification leads to attitudinal formation and change (Koivisto & Hamari, 2019). The qualitative phase of this research provides evidence of how both internal and external motivational factors (Seaborn & Fels, 2015) led users to engage with the app and strengthen their ties with the featured brands displayed on the app. These results aligned with SDT (Ryan & Deci, 2000) by demonstrating how gamified elements of the app helped consumers to gain benefits

(e.g., Deterding et al., 2011; Mekler et al., 2015), which added value to their consumption experience (Hofacker et al., 2016). We specifically find that receiving benefits was important to the app's usage (Blohm & Leimeister, 2013; Hofacker et al., 2016; Huotari & Hamari, 2011) via the identification of the *Rewards*, *Competition*, *Sense of Achievement*, and *Gaining Knowledge* themes discovered. Collectively, these themes explain the various forms of social, economic, and social benefits (Gummerus et al., 2012) consumers extracted from engaging with the third-party app. However, these forms of affordances led to *Engagement* and *Identity* with the core service.

The app enabled users to satisfy extrinsic motivations by earning tangible *Rewards*—such as prizes from their favorite athlete and team—for engaging with the app (e.g., Brown, 2007; Kumar & Reinartz, 2016; Seaborn & Fels, 2015). Additionally, users also identified how non-sport related prizes acted as an incentive to keep them engaged with, and using, the third-party app. Respondents discussed how game elements such as quizzes and check-ins helped to gamify their experience of following their favorite team and leverage the points gained from this engagement into tangible rewards.

The *Competition* theme reflected how engagement with the app enabled individuals to satisfy intrinsic needs including the need for socialization and competence (e.g., Deterding et al., 2011; Mekler et al., 2015; Seaborn & Fels, 2015). Results show the impact of social Users explained how the application enabled them to both engage with their favorite team in depth and compete with other fans (e.g., Algesheimer et al., 2005; Algesheimer et al., 2010) via quizzes, match predications and with respect to their overall leaderboard position. These gamified elements helped the users to distinguish themselves from others through their accomplishment, not just through possessions (cf. Butcher, Phau, & Shimul, 2017), and to experience a sense of social integration (through competing with other fans), personal integration (by enhancing one's

GAMIFIED CONSUMER ENGAGEMENT

status as a consumer), and hedonic benefits in instances where the users competed or were ranked favorably (Alnawas & Alburub, 2016; Wirtz et al., 2013).

The *Sense of Achievement* theme represented the satisfaction of intrinsic motivations related to the user experiencing hedonic and social value from their engagement with the app (Seaborn & Fels, 2015). Users recounted how the badges and prizes they received from demonstrating their competence as a team fan (via quizzes and match predictions) enhanced their feelings and position in the fan group community. Users liked how their engagement and accomplishments were recognized in the app, which led to feelings of competence (e.g., Deterding et al., 2011; Mekler et al., 2015; Seaborn & Fels, 2015). Through these actions, users were able to engage further with the brand and other likeminded consumers (e.g., Algesheimer et al., 2005; Algesheimer et al., 2010) and express their identity with other community members (McAlexander, Schouten, & Koenig, 2002).

The *Gaining Knowledge* theme reflected an activation of intrinsic motivations related to the consumers being able to learn more about their favorite team through their use of the app (e.g., Algesheimer et al., 2005; Algesheimer et al., 2010). Interestingly, the users reported that affordances like the quizzes and match prediction features enabled them to gain knowledge on aspects broader than their favorite team. These aspects reportedly enhanced their knowledge surrounding the league, the sport of football in general, and other teams, contributing to knowledge on the sport brand ecosystem that outlines how sport brands are connected with another (Kunkel & Biscaia, 2020). This theme reflected how users were able to gain knowledge about these brands (Alnawas & Alburub, 2016; Dholakia et al., 2009), which reduced uncertainty through app use (Adjei et al., 2010). Conceptually, this improved knowledge could reinforce or enhance one's position in the group (McAlexander et al., 2002) and enable the consumer to extract more value from their consumption experiences (Dholakia, Blazevic, Wiertz, &

Algesheimer, 2009). Based on these findings, practical implications are suggested to guide managers seeking to leverage gamification for relationship marketing purposes.

Practical Implications

Organizations can use this information to engage their consumers using gamified content. Considering that engagement within the app only represents one aspect of behavior toward a sport team (e.g., attending games, following online, etc.), it is remarkable that this engagement explained 11.3% of the change in consumers' loyalty toward their favorite team. Gamified engagement can stimulate positive emotions, such as a sense of achievement, which can foster consumers' loyalty development, and subsequently influence other sport related consumption behavior (e.g., merchandise purchase, game consumption). Consequently, the factors that contribute to consumption can be leveraged in game design and marketing of this content. As such, the goal for companies using apps to achieve business goals is to generate a pleasurable platform with integrated gamified elements that leverage intrinsic and extrinsic rewards.

Successful gamified platforms cater to a variety of consumer needs. Based on the findings of this research, organizations can target consumers that are focused on reaping extrinsic rewards. Like individuals who bet (e.g., Na et al., 2019), organizations can target these consumers through promotions that promise a high return on time and money invested. Providing options to win prizes, such as merchandise or company products, or launching crypto tokens are possible motivating factors that may attract and maintain engagement within the app. Third-party organizations can also target consumers who are focused on gaining new knowledge related to the core service, its products, and associated entities. These consumers can be targeted through providing information that will foster their identify as an informed consumer. Providing exclusive access to insider information or using quiz questions are possible motivating factors

GAMIFIED CONSUMER ENGAGEMENT

that can be leveraged to attract and maintain engagement within the app. Furthermore, third-party organizations can target consumers who are focused on competing with others and gaining a sense of achievement in relation to the core service. These mechanisms may trigger identity development processes and consumers can be targeted through providing mechanisms that help them gain social status and bragging rights compared to peers or other consumers through leaderboards and social sharing of accomplishments.

Providing competitions that test knowledge or skills and enabling sharing via social media are mechanisms to attract and maintain app engagement. While consumers are attracted to apps for different reasons and companies can target these consumers' through targeted advertising, using gamified elements to combine the motivating factors (e.g., using competition to create social status and external rewards) may be most advisable. Third-party app organizations interested in demonstrating value to core service providers, such as to form partnerships or derive investments should focus on providing affordances that increase knowledge related to the core service or foster identity development processes. Overall, companies can increase over-the-top revenue through sponsorship, or in-app purchases and potentially use the app as a secondary platform to provide organization-related sales offers.

Limitations and Future Research

Limitations of this research offer future research opportunities. First, the sample consists of respondents who used the app over the course of one season, which excludes users who stopped using the app during the course of the research and those who signed up after the first phase of data collection had finished. These excluded individuals may have had different experiences with using the application. Researchers should investigate some of the reasons behind dropping out of gamified applications to highlight patterns of ceased and non-

consumption. For example, one participant stated that he was less of a fan compared to the beginning of the season because he had a baby and could not attend games anymore. These life changes are beyond the control of companies, and may also explain the relatively low (5.2% and 11.3%) explained variance. While these numbers may look small, engagement within the app only represents one aspect of users' interaction within the sport brand ecosystem (Kunkel & Biscaia, 2020) and other team-related behavior, such as attending games or following the team on social media, likely influence users' fandom. Examining the uses and impacts of gamification across several contexts would challenge or confirm the generalizability of the results from the present study. Future research in other service industries and contexts is needed assess the broader transferability of the findings observed here.

Second, the reported longitudinal change reflected in quantitative findings was not as strong as indicated in qualitative findings, highlighting a limitation of relying on the same pre- and post-test Likert scale items in examining change. In the current research, identifying change was limited to assessing whether respondents changed their Time 1 loyalty score at Time 2, which did not allow for the full spectrum of potential change to be teased out, especially for individuals who were highly (or maximally) loyal at Time 1. For example, one respondent stated: "I was a hardcore fanatic before the season, I still am a hardcore fanatic now." indicating limitations with metricizing fandom via traditional Likert scale items. Thus, researchers should include a 'change item' in the second phase of longitudinal research, which indicates whether individuals perceived change or not. A 7-point semantic differential of "my loyalty has decreased" to "my loyalty has increased" would have teased-out change, even for individuals who indicated being a casual observer (1) or hardcore fanatic (7) at Time 1. Another way to build on the findings observed here would be to integrate further data collection points within future research designs. Complementing pre- and post-season observation points with a mid-season

measurement could help to identify changes in consumer behavior and isolate gamification effects.

Third, time effects may have influenced the findings reported at the end of the season. Specifically, certain individuals may have experienced an inflated sense of engagement after the season had concluded, particularly if their team was successful (e.g., won a trophy) or achieved better than expected results. Although, the influence of the app on involvement was supported by results of the regression analysis and the interviews, researchers should nevertheless account for this effect by testing the influence of apps and collect data at Time 2 at the exact same time as in Time 1 (e.g., both data collections launched in August). This may be simpler for sports that do not have large off-season events (e.g., teams in the NFL or MLB), as soccer can be consumed even in the off-season through large scale international events (e.g., the FIFA World Cup). Whilst not the focus of this study, future research should explore effects at different levels of league competition – contrasting how gamification elements may impact consumers of elite versus lower level leagues. Furthermore, there are opportunities to examine the impact of gamification in low involvement contexts, such as gamifying advertisements or sponsorship activations.

A final limitation of this work stems from the fact that we investigated the positive outcomes of gamification. Researchers have acknowledged customer engagement can lead to positive or negative outcomes for the organization depending on whether or not the inclusion of customers leads to a contribution of, or a destruction of, value (Beckers, van Doorn, & Verhoef, 2017; Hanus & Fox, 2015; Libai et al., 2010; Verhoef et al., 2010). Consequently, the gamified elements of this application may have reduced the engagement levels of some users or otherwise discouraged them from engaging to their full capacity (Beckers, van Doorn, & Verhoef, 2017; Libai et al., 2010; Verhoef et al., 2010). For instance, an individual who ranked lowly in the leaderboard, answered quiz questions incorrectly, and regularly predicted the wrong game result

could have perceived that his or her experience was devalued by the app. This may have had a negative effect on this user's loyalty as their identity as a 'real fan' may have been challenged. Thus, research is encouraged to examine how and why such practices may damage certain consumer's perceptions of the customer experience. Research assessing consumer levels of satisfaction with gamified apps, coupled with qualitative enquiries allowing consumers to reveal which elements they most liked and those that they would like to see could be effective in this regard. Aligned with this approach, future research should also investigate the inter-relationship between engagement and loyalty, as loyalty has also been shown to influence engagement (Bergkvist & Bech-Larsen, 2010).

Conclusion

The present research demonstrates how third-party applications can positively impact consumer engagement with core service providers. Findings of app usage behavior in Study 1 show that completing achievement-oriented activities within a third-party app positively influenced users' attitudinal loyalty toward the core service. Findings of follow-up interviews show four themes – *Rewards*, *Competition*, *Sense of Achievement*, and *Gaining Knowledge* – motivated users to engage in the app and triggered *Engagement* and *Identity* development processes, which explained how using the gamified application influenced users' attitudinal loyalty change toward the core service. Overall, we contribute to knowledge about how gamified affordances can be used to add value to consumer experiences, both in relation to the gamified consumption experiences, and the core service that is serviced by a third-party app.

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Appendix

Table 7: *Interview questions*

Purpose	Question
Usage behavior	Please walk me through how you generally use the app.
Affordances	Which elements / activities do you use? What do you like about these elements / activities?
	What do you like about the app?
	How could the app be improved?
Influence of app on core service	Does the app play a role in the way you follow your favorite team? If so, please elaborate how.
	Overall, does the app influence your connection to your favorite team? If so, please elaborate why.

Note: Questions were developed based on Wilson (2014) and in cooperation with the application development team.