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Experiences that matter? The motivational experiences and business outcomes of gamified services

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ABSTRACT

Digital service providers are increasingly "gamifying" their services (i.e., enriching non-game services with game elements) to foster additional user value in terms of specific user experiences. Understanding how such experiences of gamified services influence business outcomes is critical. Drawing on service-dominant logic and self-determination theory, this research examines the impact of motivational user experiences (self-development, social connectedness, expressive freedom, and social comparison) on firm-beneficial behavior. Findings from a cross-contextual study reveal that motivational experiences increase these outcomes to different extents. Among the experiences examined, self-development has the strongest effect on business outcomes. Importantly, some experiences interact in a way that negatively affects those outcomes. For instance, the interplay between social comparison and social connectedness or expressive freedom is dysfunctional and impairs firm-beneficial user behavior. The study's results help service providers to prioritize those experiences that matter most for their business goals.

1. Introduction

The explosive proliferation of digital services has increased service providers' difficulty in standing out from the crowd and has intensified switching behavior (Arora, ter Hofstede, & Mahajan, 2017). Switching is particularly evident in the rapidly growing mobile market, where 89% of users churn within just one week after initial app installation (Appboy, 2016). These numbers are alarming, as the profitability of mobile app providers depends on business models where revenues predominantly result from advertising, in-app purchases, or paid-premium upgrades (Liu, Au, & Choi, 2014). Thus, to retain profitable customers and to grow revenue streams, digital service providers need to offer additional value propositions.

One emerging approach to enhance value is gamification, which aims at nurturing user experiences (e.g., competition) through game elements (e.g., badges) that motivate users to achieve personal goals (Deterding, Dixon, Khaled, & Nacke, 2011; Huotari & Hamari, 2017). Already employed by many companies to engage users (e.g., Nike+ Run Club; Microsoft Ribbon Hero), gamification is expected to grow to $11.10 billion in investments by 2020 (Markets and Markets, 2016).

Gamification has been researched in various contexts such as health (e.g., Hamari & Koivisto, 2015b; Hammedi, Leclerq, & Van Riel, 2017), education (e.g., Landers & Armstrong, 2017; Landers & Landers, 2014), work environments (e.g., Korn & Schmidt, 2015; Vesa, Hamari, Harviainen, & Warmelink, 2017), e-commerce (e.g., Hamari, 2013, 2017), and marketing (e.g., Berger, Schlager, Sprott, & Herrmann, 2018; Müller-Stewens, Schlager, Häubl, & Herrmann, 2017). While some studies have empirically examined the impact of gamification on usage intention (Hamari, 2017; Hamari & Koivisto, 2015a, 2015b; Rodrigues, Costa, & Oliveira, 2017; Suh, Cheung, Ahuja, & Wagner, 2017; Wolf, Weiger, & Hammerschmidt, 2018), quantitative research examining the impact of gamified services on firm-beneficial outcomes remains scarce (with the notable exceptions of Hamari & Koivisto, 2015b and Jang, Kitchen, & Kim, 2018). As marketers already have high expectations of gamified services, the need to examine their effectiveness in driving business outcomes beyond service use is critical (Hofacker, de Ruyter, Lurie, Manchanda, & Donaldson, 2016).

To understand how user experiences stemming from gamified services affect firm-beneficial user behavior, we draw upon a theoretical tandem of service-dominant logic (S-D logic) and self-determination theory (SDT). Prior research suggests that these user experiences can satisfy basic psychological needs or elicit perceived pressure (Ryan, Rigby, & Przybylski, 2006; Wolf et al., 2018) and thereby provide motivational value. Thus, to gauge whether gamified services translate into firm-beneficial behavior, we examine how motivational user experiences influence three firm-beneficial outcomes: (1) customer

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commitment, (2) willingness to pay, and (3) customer referrals. Because gamified services typically facilitate multiple motivational experiences simultaneously, we also consider their interplay in affecting business outcomes.

We conduct a field survey across four service contexts. The dataset comprises 511 users' perceptions of motivational experiences of ten gamified apps that vary regarding the embedded game elements. The results of seemingly unrelated regressions provide evidence that motivational user experiences affect firm-beneficial outcomes differently and not only positively.

The findings contribute to service marketing literature as well as the emerging research stream on gamification in marketing in several ways. First, when examining the impact of gamification on user behavior we concentrate on user experiences instead of game elements (Hammedi et al., 2017; Huotari & Hamari, 2017). Specifically, we draw on S-D logic to argue that gamified services add value-in-use in form of user experiences that occur through users' interaction with game elements embedded in a service (Vargo & Lusch, 2008). We show that individuals' experiences related to gamified services have immediate consequences for firm-beneficial outcomes. Thereby, we focus on a user-centered perspective to highlight that promoting specific experiences in gamified services can be a powerful approach through which providers are able to co-create value (Hammedi et al., 2017). This perspective complements seminal research that adopted a design-oriented understanding of gamification (e.g., Mekler, Brühlmann, Tuch, & Opwis, 2017).

Second, we draw on SDT to point out that experiences while using gamified services unfold motivational value by either promoting the satisfaction of three basic psychological needs (competence, relatedness, and autonomy) or eliciting perceptions of pressure (Deci & Ryan, 2000; Wolf et al., 2018). Thus, gamified services can nurture inherently pleasurable and satisfying experiences as well as outcome-oriented experiences such as status gains (Hamari, Hassan, & Dias, 2018; Ryan et al., 2006). Specifically, we argue that user experiences occurring during the use of gamified services – self-development, social connectedness, expressive freedom, and social comparison (Wolf et al., 2018) – are genuinely motivational and drive firm-beneficial user behavior beyond motivating personal goal achievement.

Third, we provide insights into how the simultaneous occurrence of such experiences plays out for firms. In real life, use of gamified services is often associated with more than one experience at the same time (Wolf et al., 2018). For instance, gamified services that issue public badges could lead to experiencing competition, status, achievement, and challenge. As SDT supports the view that different motivational experiences can emerge simultaneously (Ryan & Deci, 2002), examining the experiences' interactions helps explain behavioral consequences of gamified services that have so far been neglected. This consideration allows for a more realistic picture of the implications of gamified services, and we argue that researchers and managers risk missing performance-relevant aspects if they consider experiences only in isolation.

2. Conceptual framework and hypotheses

2.1. Firm-beneficial user behavior

To remain profitable, digital service providers depend heavily on customers who commit to continued service use, who are willing to pay for further or more intensive use, and who recommend services to other potential customers. Thus, our framework centers on outcome variables that reflect such firm-beneficial user behavior: customer commitment, willingness to pay, and customer referrals (e.g., Kumar & Reinartz, 2016).

Customer commitment refers to a user's enduring desire to continue a relationship with a service provider and to make efforts to maintain that relationship (DeWulf, Odekerken-Schröder, & Iacobucci, 2001). Commitment is critical for customer profitability because it translates directly into repeated service use (Cho, 2006). We use *willingness to pay* to refer to the inclination to accept price increases for using a service (Pihlström & Brush, 2008; Zeithaml, Berry, & Parasuraman, 1996), which contributes to customer profitability as it is linked to higher customer spending. Finally, we define *customer referrals* as all interpersonal communication containing recommendations of a service (Anderson, 1998). Because consumers perceive customer referrals as more authentic than traditional advertising, referrals are especially potent in persuading others to adopt a service. Recommendations increase profitability as they likely influence an existing customer's own activity with the firm and lead to the acquisition of new customers (Garnefeld, Eggert, Helm, & Tax, 2013).

2.2. Gamification as a co-creation process

To foster firm-beneficial user behavior, firms started enhancing their services through gamification to offer additional value (Hofacker et al., 2016). *Gamification* is a process of enhancing a service with game elements. The goal of this process is to facilitate user experiences in form of a game-like feeling and result in user value by providing motivational support (Huotari & Hamari, 2017). Consequently, the present research considers experiences as genuine drivers of user behavior, and our conceptual framework reflects this user-centric understanding of gamification.

We draw on S-D logic to understand how gamification creates value in terms of user experiences (Zomerdijk & Voss, 2010). S-D logic holds that firms do not provide value through their services but only a value proposition (Vargo & Lusch, 2004). Thus, user value unfolds through a co-creation process between service providers and users. Further, the actual value is determined solely by users' subjective experiences, which arise through the interaction with the provided service, generally referred to as value-in-use (Payne, Storbacka, & Frow, 2008; Vargo & Lusch, 2008). Consequently, experiences can only be facilitated and not provided by service firms (Hume, Sullivan Mort, Liesch, & Winzar, 2006).

Applying S-D logic in the context of gamified services, we first argue that the game elements embedded in gamified services offer a value proposition (Zomerdijk & Voss, 2010). Second, the co-created value stems from user experiences as users interact with the gamified service (Vargo & Lusch, 2008). Importantly, this understanding integrates the provider and user perspectives, as input from both sides is required to allow for value co-creation.

2.3. Motivational user experiences of gamified services

The main idea behind gamification is to leverage the motivational power of games to help users achieve personal goals (Nicholson, 2012). Thus, we focus on motivational experiences arising through gamified service use (constituting the co-created value) to understand gamification's implications for firm-beneficial user behavior. According to SDT, motivational experiences are the reasons for recurrent gamified service use and can be categorized along a continuum of self-determination. High self-determination relates to engaging in an activity for the pleasure and satisfaction derived from the activity itself, whereas low self-determination refers to behavior carried out to achieve outcomes unrelated to the activity (Ryan & Deci, 2000). Perceptions of high self-determination arise through satisfaction of the three psychological needs of competence, relatedness, and autonomy. Competence is the need to feel effective in one's ongoing actions and is enhanced by experiencing challenges and coping with these challenges. Relatedness is the need to feel connected to others and stems from experiences of being part of a community. Autonomy is the need to perceive oneself as the origin of one's behavior and emerges from experiencing freedom of choice and acting on the basis of personal interest and values (Ryan & Deci, 2000). Perceptions of low self-determination relate to

experiencing pressure while engaging in an activity, such as when seeking approval, feeling shame, or avoiding guilt (Deci & Ryan, 2000; Gagné & Deci, 2005).

SDT is particularly appropriate for investigating the behavioral impact of various motivational user experiences in the context of gamified services. Psychological need-satisfying experiences occur with full-fledged games (e.g., Peng, Lin, Pfeiffer, & Winn, 2012; Ryan et al., 2006) as well as gamification (e.g., Sailer, Hense, Mayr, & Mandl, 2017).[1] In a nutshell, people play games because of the inherent properties of need-satisfying experiences, which create "fun" independent of external contingencies (Przybylski, Rigby, & Ryan, 2010; Ryan et al., 2006). However, although gamified services aim to facilitate experiences that motivate by satisfying the three basic psychological needs, they nevertheless represent external stimuli and thus can inflict a sense of pressure (e.g., through competition). Accordingly, the experiences arising in the context of gamified services may provide different motivational forces for use behavior and thus may influence business outcomes differently.

Gamification literature repeatedly lists a plethora of user experiences (e.g., achievement, competition, self-expression, social interaction), which essentially represent motivational experiences but are not necessarily labeled as such (e.g., Koivisto & Hamari, 2019). Wolf et al. (2018) identified nine user experiences that are common in the context of gamified service use, which were captured in literature overviews (e.g., Matallaoui, Koivisto, Hamari, & Zarnekow, 2017), conceptual articles (e.g., Bui, Veit, & Webster, 2015), quantitative research (e.g., Suh, Wagner, & Liu, 2015), and qualitative research (e.g., Lucassen & Jansen, 2014) and then matched with insights from a focus group. In the study, users of gamified services rated to what extent common game elements are associated with the experiences, resulting in four distinct dimensions of user experiences: self-development, social connectedness, expressive freedom, and social comparison (Wolf et al., 2018).

We draw on these findings and relate the identified experiences to the pillars of SDT to elaborate whether they reflect relevant motivational user experiences that affect firm-beneficial user behavior. Given that individuals primarily use services to gather satisfying experiences (Holbrook, 2006) and that games and gamified services are designed to evoke pleasurable, need-satisfying, or supportive experiences to achieve personal goals (Huotari & Hamari, 2017; Ryan et al., 2006), we argue that the four user experiences stemming from gamified services will influence firm-beneficial user behavior by creating additional user value (Lemon & Verhoef, 2016). Furthermore, we assume that some of those motivational experiences interact positively in that they are even more satisfactory to users if they emerge concurrently, but other experiences may evoke interactions that are unpleasant and hamper firm-beneficial behavior (see Fig. 1).

2.3.1. Self-development

Broadly speaking, *self-development* refers to mastering one's everyday life by continued improvement of abilities and valued skills (Bauer & McAdams, 2004; Ryff & Keyes, 1995). This dimension relates to perceiving achievement, being challenged, and making progress (Wolf et al., 2018). Thus, since self-development is fostered by seeking challenges and advancing effectiveness, we assume that it satisfies the need for competence (Ryan & Deci, 2002). Therefore, in gamified service contexts, perceived self-development is enhanced when tasks deliver ongoing challenges and the service provides positive feedback (Ryan et al., 2006). For example, game elements like points or badges represent feedback mechanisms for achieving progress and reaching goals (Hamari et al., 2018). Other typical features, such as digital coaches who assign missions or quests adapted to users' skill levels, also make people feel challenged and result in continued experiences of self-development (Peng et al., 2012; Przybylski et al., 2010). Thereby, gamified service users are less likely to be either bored or overwhelmed and are able to sustain the desired activity (Csikszentmihalyi, 1975). Hence, we propose that experiencing self-development through a gamified service can also provide increased enjoyment like playing video games (e.g., Przybylski, Ryan, & Rigby, 2009), which makes this experience valuable for users (Lemke, Clark, & Wilson, 2011). Thus, we suggest that self-development will foster firm-beneficial behavior like committing to a service provider and recurrently using the service to experience competence need satisfaction and joy (Lemon & Verhoef, 2016), paying for the opportunity to re-experience the satisfaction (Lemke et al., 2011), or recommending the service to share memorable experiences with peers (Pullman & Gross, 2004).

H1. Self-development has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.2. Social connectedness

Social connectedness refers to the formation of interpersonal attachments (Baumeister & Leary, 1995) and relates to perceptions of social interaction and cooperation (Ryan & Deci, 2002; Wolf et al., 2018). According to SDT, experiencing social connectedness is linked directly to relatedness need satisfaction and is enhanced by activities that foster a sense of belonging (Deci & Ryan, 2000). By providing features like commenting or other forms of interaction as well as working together to solve quests, gamified services are likely to facilitate social connectedness experiences (Wolf et al., 2018). Experiencing social connectedness is need satisfying and thus increases perceived user value (Deci & Ryan, 2000; Hamari & Koivisto, 2015b). Like self-development, social connectedness will enhance firm-beneficial user behavior in terms of customer commitment, willingness to pay, and customer referrals by providing memorable and meaningful user value (Pullman & Gross, 2004).

H2. Social connectedness has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.3. Expressive freedom

Expressive freedom is the ability to act in one's own interest without restrictions (de Almeida, Dholakia, Hernandez, & Mazzon, 2014) and is represented by choice perception and self-expression (Wolf et al., 2018). Experiencing expressive freedom corresponds to the satisfaction of the need for autonomy, as both convey the feeling that behavior originates from oneself (Ryan & Deci, 2002). Minimizing external restrictions in gamified service use and offering a variety of personalization options establish expressive freedom (Deci, Koestner, & Ryan, 1999; Peters, Calvo, & Ryan, 2018). For example, the possibility of presenting oneself fosters self-expression experiences, and providing a wide range of exercises to achieve fitness goals in fitness apps, promotes a sense of choice and freedom (Przybylski et al., 2010; Ryan et al., 2006). Thus, as expressive freedom is valuable and autonomy-satisfying, it will drive firm-beneficial user behavior as users try to prolong obtaining these benefits (Verhoef, 2003), are willing to pay for valuable experiences (Sweeney & Soutar, 2001), and are moved to talk about them (Lemke et al., 2011).

H3. Expressive freedom has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.4. Social comparison

Social comparison refers to the inherent human desire to benchmark one's own abilities and accomplishments with those of other people (Festinger, 1954). The underlying assumption is that individuals are motivated to outperform others to gain recognition (Zuckerman & Gal-

[1] The concept of flow could be another appropriate theory (Csikszentmihalyi, 1975) for investigating the effects of gamification. However, we draw on SDT, as it considers a broader spectrum of motivational experiences, as is the case in this study.

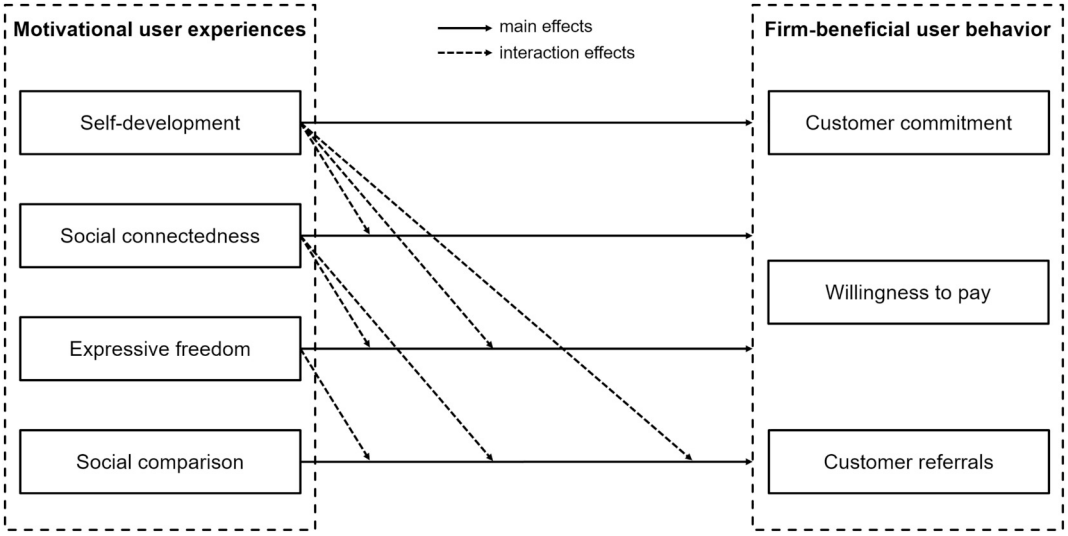

Fig. 1. Conceptual model of motivational user experiences and firm-beneficial outcomes of gamified services.

Oz, 2014). Hence, this dimension relates to status concerns and experiences of competition (Wolf et al., 2018). We emphasize that, in line with SDT, social comparison can lead to behavior that seeks to avoid feelings of shame for underperforming or to be admired for one's performance, which both induce perceived pressure to perform (Deci & Ryan, 2000). Thus, social comparison is prevalent in gamified service contexts where users are compared with others or ranked on the basis of performance (Reeve & Deci, 1996). Game elements like leaderboards or ranking lists help users to gain status or cause rivalry among users (Blohm & Leimeister, 2013). These experiences are inherently satisfying, as humans define themselves through social feedback, and thus motivate individuals to sustain activities merely for the outcome (Deci & Ryan, 2000; Leary & Kowalski, 1990). In sum, social comparison provides motivational support and will increase firm-beneficial user behavior by providing user value during service use (Lemon & Verhoef, 2016).

H4. Social comparison has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.5. The interaction between self-development and social connectedness

Typically, because gamified services often include multiple game elements, they facilitate different motivational user experiences at the same time. Thus, to understand experiences' impact on firm-beneficial outcomes, we elaborate on whether and how the interplay of motivational experiences can enhance or mitigate users' perceived value.

The need satisfaction of gamified service use should be strengthened by concurrent experiences of self-development and social connectedness (Ryan & Deci, 2000). We expect that users will perceive increased value when they share their own development with closely connected peers, because recognition from a highly valued reference group is critical for psychological well-being (Barnett, Vitaglione, Bartel, & Sanborn, 2000; Cialdini & Goldstein, 2004). For example, when letting users share or receive praise for their achievements a gamified service facilitates perceptions of progress and belonging simultaneously. Thus, satisfaction of the needs for competence and relatedness should be reinforced (Hamari & Koivisto, 2015a). As argued earlier, need-satisfying experiences should lead to greater user value, which will translate into behavior that enables users to repeatedly gather such experiences or encourages sharing such experiences. Hence:

H5. The interaction between self-development and social connectedness has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.6. The interaction between self-development and expressive freedom

Further, if self-development and the freedom to express oneself coexist, mutually reinforcing effects on users' need satisfaction are likely to occur (Ryan, 1982). Goal attainment and achievements are more satisfying when they result from activities carried out voluntarily (i.e., “doing as I want”) instead of resulting from external contingencies (i.e., “doing as I should”; Ryan, 1982). For example, when an individual successfully finishes a quest the experience of self-development will be more competence-satisfying and provide more value if at the same time the individual feels autonomous in terms of identifying with the quest's goal (Przybylski et al., 2010). Similarly, if users have the freedom to do whatever they want in a service, the satisfaction of the need for autonomy should increase with a strengthened ability to actually master all challenges (e.g., start and solve the hardest quest). Thus:

H6. The interaction between self-development and expressive freedom has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.7. The interaction between self-development and social comparison

We expect that experiences of self-development and social comparison, if nurtured together, will reinforce each other to enhance perceived value. For instance, challenging oneself is an important factor for perceiving gains in competence, which can be enhanced when competing with others. Hence, mere competition, regardless of the result, is perceived as challenging, in particular when benchmarking oneself with others who have a comparable skill level (Deci & Ryan, 2000; Reeve & Deci, 1996). When gamified services induce a sense of comparison by ranking users on the basis of their ongoing progress and simultaneously foster perceptions of being challenged, the satisfaction of the need for competence and resulting user value should be exponentially increased (Liu, Li, & Santhanam, 2013).[2] Correspondingly, the motivational effect of social comparison will be boosted (e.g., through increased status) when skills are compared in which users are advanced. Hence:

H7. The interaction of self-development and social comparison has a

[2] Competition can also be perceived as controlling and thereby impairing self-development experiences (Reeve & Deci, 1996). However, feedback provided by gamified services concentrates on being informational and usually avoids negative framing (Blohm & Leimeister, 2013). Thus, the potential negative effect of social comparison on the satisfying effect of self-development is less likely to occur in this context.

positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.8. The interaction between social connectedness and expressive freedom

We suppose that social connectedness and expressive freedom also function as a set of mutually reinforcing experiences in terms of increased need satisfaction. Experiencing social connectedness stems from the feeling of being part of a group (Ryan & Deci, 2002), which has social norms that determine the interaction of group members and can lead to normative behavior to meet the expectations of peers (Goldstein, Cialdini, & Griskevicius, 2008). However, if a service community's norms match a member's own values, the member's behavior in the community should be perceived as volitional and not "enforced" by group norms. Thus, experiencing social connectedness paired with expressive freedom should increase satisfaction with both relatedness and autonomy needs, resulting in increased user value (Ryan & Deci, 2002). Therefore:

H8. The interaction of social connectedness and expressive freedom has a positive effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.9. The interaction between social connectedness and social comparison

We expect social connectedness and social comparison to be less satisfying for users when evoked concurrently. When social connectedness is strong, people are concerned about the well-being of their peers and preservation of relationships is paramount (Fiske, 1992). Thus, group members try to avoid situations that can negatively affect group cohesion. However, social comparison can lead to exactly those situations. For example, leaderboards constantly upgrade and downgrade peers by ranking them, fostering issues between members (Hamari et al., 2018; Krasnova, Widjaja, Buxmann, Wenninger, & Benbasat, 2015) and potentially hampering relatedness need satisfaction in a strongly connected group (Peters et al., 2018). Concurrently, the motivational power of social comparison also shrinks, as in a strongly connected group a member's status is not based solely on performance comparison (Wirtz, Orsingher, Chew, & Tambyah, 2013). Accordingly, we suggest that simultaneously experiencing social connectedness and social comparison will be less desirable and less valuable for users. Hence:

H9. The interaction between social connectedness and social comparison has a negative effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

2.3.10. The interaction between expressive freedom and social comparison

We also propose that the simultaneous occurrence of expressive freedom and social comparison will be less satisfying for users. Because experiencing expressive freedom stems from perceptions of acting out of one's own interests, it is strongly associated with the feeling of self-determination (Ryan & Deci, 2002). However, as social comparison puts external contingencies on the outcomes of expressive freedom, it might be crowded out (de Almeida et al., 2014; Reeve & Deci, 1996). In the case of gamified services, this crowding out effect might occur when users have vast possibilities to reach a goal while using a service, but the activity performance (i.e., outcome) is benchmarked against other users. In other words, social comparison undermines autonomy need satisfaction gained through expressive freedom. In essence, the ability to individually express oneself conflicts with social comparison, and thus facilitating both experiences concurrently is less satisfying and less valuable for users. Hence:

H10. The interaction between expressive freedom and social comparison has a negative effect on (a) customer commitment, (b) willingness to pay, and (c) customer referrals.

3. Method

We conducted an online field survey to collect data on users' motivational experiences with gamified services and their intentions to engage in firm-beneficial behavior. To ensure external validity, the sample contains actual users of gamified apps in different service contexts. We focus on users of ten apps that we selected from 50 apps in four service contexts (education, fitness, nutrition, and organization) on the basis of app popularity.[3] Importantly, to achieve a representative sample and high variance of motivational experiences, we ensured that the selected apps had varying numbers of game elements (minimum = 2, maximum = 9) because these elements constitute the baseline of an app's capacity to nurture motivational experiences and thus also need satisfaction.[4] Table 1 presents an overview of the selected apps contained in the sample, the sample size per service context, and embedded game elements.

3.1. Data collection

To target actual users of gamified apps we conducted an online questionnaire, which we distributed across social media groups directly related to one of the focal apps or the respective service context. Four vouchers worth 25€ each were raffled among all participants. We collected data from 571 respondents, who used one of the focal apps at least once. Responses from participants who did not answer the survey completely or answered click-through questions incorrectly were removed from the initial sample, resulting in an effective total of 511 respondents (61% female; M_{age} = 28.23, SD_{age} = 8.53) for further analyses. The course of the survey was as follows. First, on the basis of their previous use experience, participants chose one of the ten gamified apps. Second, the respondents answered questions about their intentions to engage in firm-beneficial behavior toward the app, their motivational experiences with the focal app, and several control variables (e.g., demographics and technology experiences).

3.2. Measures

Unless stated otherwise, we used seven-point Likert scales (1 = "strongly disagree" and 7 = "strongly agree") to capture all items. We adapted single items[5] to capture willingness to pay (Pihlström & Brush, 2008) and customer referrals (Maxham & Netemeyer, 2002). To capture customer commitment we adapted two items (DeWulf et al., 2001), and to capture motivational user experiences in the context of gamified services, we adopted nine items from Wolf et al. (2018). The Cronbach's alphas confirm acceptable construct reliability for the experience dimensions ($\alpha \geq 0.71$), except for expressive freedom ($\alpha = 0.50$; Nunnally, 1978). Owing to the insufficient Cronbach's alpha value for expressive freedom, we ran a confirmatory factor analysis to ensure reliability and validity of the motivational experiences. Average variance extracted (AVE ≥ 0.65) and composite reliability (CR ≥ 0.79) suggest that the convergent validity and reliability requirements are

[3] We conducted a pre-study (n = 443) to identify the most popular apps among 50 randomly selected gamified apps with >500,000 downloads. To preselect the 50 gamified apps, we trained two research assistants, who were blind to our research goal, to single out gamified apps by conducting a search in the Google Play Store and Apple App Store according to the definition of gamified services used in this research. For every service context, we included only those apps in the main study that were mentioned by at least 10% of the pre-study participants, which yielded ten apps in the selected four service contexts.

[4] Wolf et al. (2018) examined the relationship between game elements and those experiences. The results indicate that every game element is associated with at least one of the motivational experiences.

[5] Single items are sufficient to measure both constructs as they are unidimensional, have a clear meaning for participants, and can be easily and uniformly imagined (Rossiter, 2002).

Table 1
Selected gamified apps, sample size per service context and implemented game elements.

Service context	Mobile app	Implemented game elements	Number of game elements
Education (n = 94)	Babbel	Badges, friending, points, quests, social feedback, user levels, user profiles	7
	Duolingo	Badges, friending, points, quests, social feedback, teams, user levels, user profiles	8
Fitness (n = 196)	Nike+	Badges, chats, friending, leaderboard, points, quests, social feedback, user levels, user profiles	9
	Runtastic	Badges, chats, friending, leaderboard, quests, social feedback, teams, user levels, user profiles	9
Nutrition (n = 149)	FatSecret	Quests, user profiles	2
	MyFitnessPal	Chats, friending, quests, social feedback, teams, user levels, user profiles	7
	Yazio	Quests, user profiles	2
Organization (n = 72)	Evernote	Quests, user profiles, social feedback	3
	Flatastic	Chats, friending, points, quests, social feedback, user levels, user profiles	7
	Wunderlist	Chats, friending, social feedback, user levels, user profiles	5

Note: For reasons of face validity, we did not assign survey participants to service contexts and, hence, the sample size per service context is unevenly distributed. We account for these differences by controlling for service context in our analysis.

Table 2
Validity and reliability of motivational user experiences.

Measure	AVE	CR	1	2	3	4
1 Self-development	0.75	0.90	**0.86**			
2 Social connectedness	0.77	0.87	0.19	**0.88**		
3 Expressive freedom	0.65	0.79	0.49	0.41	**0.81**	
4 Social comparison	0.85	0.92	0.23	0.35	0.27	**0.92**

Notes: Bold numbers on the diagonal = square root of the AVE of the given construct; AVE is average variance extracted, CR is composite reliability.

met for the experience measures (AVE > 0.50 and CR > 0.70; Fornell & Larcker, 1981). We evaluated the experiences' discriminant validity using Fornell and Larcker's (1981) test, which revealed that all square roots of the AVEs are greater than the correlations between the corresponding experience and all other experiences (see Table 2).[6] The results confirm the four dimensions of user experiences identified by Wolf et al. (2018). Thus, we use the resulting factor scores to measure motivational user experiences in the following analyses.

To eliminate confounds, we included service-specific and user-specific controls. First, we integrated dummies for the app contexts as service-specific controls, since baseline firm-beneficial user behavior may vary across different app contexts (Hofacker et al., 2016). More specifically, baseline customer commitment may depend on the specific purpose of a service (Palmatier, Dant, Grewal, & Evans, 2006), baseline willingness to pay may differ because of context-specific price structures (Liu, Santhanam, & Webster, 2017), and baseline customer referrals may depend on whether the service context is a top of mind activity (Berger & Schwartz, 2011). Further, we used single items to control for user-specific factors: app usage duration, premium users (vs. free users), technology experiences, age, and gender. App usage duration and premium use may explain individual's behavioral outcomes because they reflect a user's retention likelihood (i.e., habitual effect and integration into everyday life) and previous involvement (e.g., personal importance of the service and previous economic investment) regarding the focal app (Datta, Foubert, & Van Heerde, 2015). Further, prior research suggests that differences in user behavior may be due to technology experience, as experience with apps and technology in general might increase perceived usefulness and self-efficacy (Olsson, Hogberg, Wastlund, & Gustafsson, 2016), to age, as older users might extract less value (Bittner & Shipper, 2014), or to gender, as females are more likely to perceive social benefits from gamified service use (Koivisto & Hamari, 2014). See Appendix Table A.1 for items and Table 3 for descriptive statistics and correlations.

We tested for common method bias as all measures are self-reported and the majority of items were measured using Likert scales. The results of Harman's one-factor test reveal the presence of six distinct factors behind the nine motivational experience items and the four firm-beneficial behavior items, where the first factor accounted for 32% of the total variance. Thus, the results demonstrate that common method bias did not contaminate the results of this study (Podsakoff & Organ, 1986).

3.3. Model

Our model contains three multiple regression equations for customer commitment (CUC), willingness to pay (WTP), and customer referrals (CUR) as the outcome variables. The relatively strong correlations between customer commitment and the other two outcome variables ($r \geq 0.42$) indicate that a separate estimation with ordinary least square regression models would be inadequate and lead to biased, inconsistent results, because the errors would correlate across equations (Johnston & DiNardo, 1997). A Breusch-Pagan test for independence ($\chi 2 = 112.82$, $p = .00$) confirms the significant contemporaneous correlation among the error terms across the three equations and shows that the endogenous variables are not stochastically independent from the error terms. This finding seems reasonable as our three dependent variables all represent firm-beneficial user behavior (Kumar & Reinartz, 2016). To avoid the potential violation of the assumption of independent observations and standard error inflation and to conduct joint hypotheses testing among coefficients across different equations, we use seemingly unrelated regressions (SUR; Kashyap, Antia, & Frazier, 2012). SUR modeling estimates a system of multiple equations while accounting for cross-equation parameter restrictions and correlated error terms (Parker & Dolich, 1986; Zellner, 1962). We estimate the following equation system:

$$\begin{aligned} CUC_i = {} & \beta_0 + \beta_1 DEV_i + \beta_2 CON_i + \beta_3 FRE_i + \beta_4 COM_i + \beta_5 DEV_i \times CON_i \\ & + \beta_6 DEV_i \times FRE_i + \beta_7 DEV_i \times COM_i + \beta_8 CON_i \times FRE_i \\ & + \beta_9 CON_i \times COM_i + \beta_{10} FRE_i \times COM_i + \beta_{11} FIT_i + \beta_{12} NUT_i \\ & + \beta_{13} ORG_i + \beta_{14} AUD_i + \beta_{15} PRU_i + \beta_{16} TXP_i + \beta_{17} AGE_i \\ & + \beta_{18} MAL_i + \varepsilon_{1i} \end{aligned} \quad (1)$$

$$\begin{aligned} WTP_i = {} & \gamma_0 + \gamma_1 DEV_i + \gamma_2 CON_i + \gamma_3 FRE_i + \gamma_4 COM_i + \gamma_5 DEV_i \times CON_i \\ & + \gamma_6 DEV_i \times FRE_i + \gamma_7 DEV_i \times COM_i + \gamma_8 CON_i \times FRE_i \\ & + \gamma_9 CON_i \times COM_i + \gamma_{10} FRE_i \times COM_i + \gamma_{11} FIT_i + \gamma_{12} NUT_i \\ & + \gamma_{13} ORG_i + \gamma_{14} AUD_i + \gamma_{15} PRU_i + \gamma_{16} TXP_i + \gamma_{17} AGE_i + \gamma_{18} MAL_i \\ & + \varepsilon_{2i} \end{aligned} \quad (2)$$

[6] Each experience loads higher on its corresponding factor than on the others, supporting the discriminant validity of the four dimensions of motivational user experiences (see Appendix Table A.1 for loadings).

Table 3
Descriptive statistics and correlations.

Measure	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Self-development	4.92	1.41	1.00											
2 Social connectedness	2.56	1.64	0.19	1.00										
3 Expressive freedom	3.22	1.38	0.49	0.42	1.00									
4 Social comparison	2.33	1.62	0.23	0.36	0.29	1.00								
5 Customer commitment	4.40	1.42	0.34	0.20	0.22	0.32	1.00							
6 Willingness to pay	2.30	1.70	0.34	0.25	0.23	0.33	0.42	1.00						
7 Customer referrals	5.90	1.22	0.36	0.12	0.03	0.18	0.43	0.19	1.00					
8 App usage duration	17.24	16.01	−0.07	−0.10	0.17	0.03	0.09	0.01	−0.04	1.00				
9 Premium app[a]	0.19	0.39	0.18	0.13	0.13	0.16	0.10	0.42	0.03	−0.05	1.00			
10 Technology experience	5.07	1.54	0.22	0.16	0.18	0.17	0.23	0.14	0.20	0.13	0.09	1.00		
11 Age	28.23	8.53	0.11	0.10	0.14	0.09	0.12	0.20	0.08	0.00	0.37	−0.02	1.00	
12 Male[a]	0.39	0.49	−0.10	0.06	0.10	−0.08	−0.13	−0.03	−0.17	0.12	−0.05	0.08	−0.06	1.00

Notes: $n = 511$; $p < .05$ for $|r| > 0.10$; based on two-tailed t-tests.
[a] Dummy variable.

$$\begin{aligned} CUR_i = {} & \delta_0 + \delta_1 DEV_i + \delta_2 CON_i + \delta_3 FRE_i + \delta_4 COM_i + \delta_5 DEV_i \times CON_i \\ & + \delta_6 DEV_i \times FRE_i + \delta_7 DEV_i \times COM_i + \delta_8 CON_i \times FRE_i \\ & + \delta_9 CON_i \times COM_i + \delta_{10} FRE_i \times COM_i + \delta_{11} FIT_i + \delta_{12} NUT_i \\ & + \delta_{13} ORG_i + \delta_{14} AUD_i + \delta_{15} PRU_i + \delta_{16} TXP_i + \delta_{17} AGE_i \\ & + \delta_{18} MAL_i + \varepsilon_{3i} \end{aligned} \quad (3)$$

where DEV_i, CON_i, FRE_i, and COM_i are motivational experiences: self-development, social connectedness, expressive freedom, and social comparison. Included control variables are FIT_i, NUT_i, ORG_i as dummy variables for the service contexts of fitness, nutrition, and organization (reference: education context), AUD_i as app usage duration, PRU_i as premium user, TXP_i as technology experience, AGE_i as age, and MAL_i as male. Finally, ε_{1i}, ε_{2i}, ε_{3i} refer to the error terms of subject i.

4. Results

Table 4 contains the results for the SUR model. In support of H1a/b–H4a/b, the results show that all motivational experiences with gamified services have significant positive main effects on customer commitment and willingness to pay ($\beta_{1,2,3,4} \geq 0.17$, $p \leq .01$; $\gamma_{1,2,3,4} \geq 0.19$, $p \leq .05$). Interestingly, for customer referrals only self-development shows a positive and significant effect (H1c: $\delta_1 = 0.43$, $p \leq .001$), while the effects of other experiences remain insignificant (H2c–H4c: $\delta_{2,3,4} \leq 0.06$, $p > .10$). Our results yield at least partial support for the hypotheses on the interaction effects of motivational experiences on firm-beneficial outcomes. Specifically, the results indicate that all experience interactions exhibit at least one significant effect on firm-beneficial outcomes, except for the interaction of social connectedness and expressive freedom (β_8, γ_8, $\delta_8 \leq 0.04$, $p > .10$).

Table 4
Main and interaction effects of motivational user experiences on firm-beneficial behavior.

Independent variable	Customer commitment				Willingness to pay				Customer referrals			
	Coefficient	SE			Coefficient	SE			Coefficient	SE		
Constant	3.40***	0.35			1.79***	0.32			5.25***	0.27		
Motivational user experiences												
Self-development	0.43***	0.07	H1a	✓	0.44***	0.07	H1b	✓	0.43***	0.06	H1c	✓
Social connectedness	0.19**	0.06	H2a	✓	0.23***	0.07	H2b	✓	0.01	0.05	H2c	✗
Expressive freedom	0.23***	0.06	H3a	✓	0.29**	0.07	H3b	✓	0.05	0.04	H3c	✗
Social comparison	0.17**	0.06	H4a	✓	0.19*	0.08	H4b	✓	0.06	0.06	H4c	✗
Interactions												
Self-development × social connectedness	0.01	0.06	H5a	✗	0.05	0.06	H5b	✗	0.09*	0.04	H5c	✓
Self-development × expressive freedom	−0.03	0.07	H6a	✗	0.12*	0.06	H6b	✓	0.08†	0.05	H6c	✓
Self-development × social comparison	0.13*	0.06	H7a	✓	0.17*	0.07	H7b	✓	0.10	0.06	H7c	✗
Social connectedness × expressive freedom	0.04	0.05	H8a	✗	0.02	0.05	H8b	✗	−0.02	0.04	H8c	✗
Social connectedness × social comparison	−0.02	0.05	H9a	✗	−0.15*	0.07	H9b	✓	−0.04	0.04	H9c	✗
Expressive freedom × social comparison	−0.16***	0.05	H10a	✓	0.02	0.07	H10b	✗	0.03	0.04	H10c	✗
Controls												
Fitness context	0.07	0.17			−0.03	0.19			−0.38*	0.16		
Nutrition context	0.10	0.17			0.15	0.22			0.17	0.15		
Organization context	0.24	0.24			−0.14	0.23			0.24†	0.20		
App usage duration	0.01†	0.00			0.00	0.00			0.00	0.00		
Premium user	−0.02	0.15			1.44***	0.19			−0.18	0.13		
Technology experience	0.12**	0.05			0.01	0.04			0.10**	0.04		
Age	0.01	0.01			0.00	0.00			0.01†	0.01		
Male	−0.39***	0.12			0.04	0.13			−0.34***	0.10		
Adj. R^2		0.20				0.29				0.21		
Max. VIF[a]		2.28				2.28				2.28		

Notes: $n = 511$. To account for heteroscedasticity, we estimated all models using robust standard errors.
† $p \leq .10$.
* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.
[a] Variance inflation factor.

Consequently, H5–H10 are partially supported while H8 is rejected.

In detail, the results support H5c, as the interaction of self-development and social connectedness has a positive significant effect on customer referrals ($\delta_5 = 0.09$, $p \leq .05$), while H5a/b are not supported because of insignificant effects on customer commitment and willingness to pay ($\beta_5, \gamma_5 \leq 0.05$, $p > .10$). In support of H6b/c, the interaction of self-development and expressive freedom has a significant effect on willingness to pay and a weakly significant effect on customer referrals ($\gamma_6 = 0.12$, $p \leq .05$; $\delta_6 = 0.08$, $p \leq .10$). However, this interaction has no effect on customer commitment ($\beta_6 = -0.03$, $p > .10$) and thus we find no support for H6a. Further, the results show positive significant interactions of self-development and social connectedness on customer commitment and willingness to pay ($\beta_7 = 0.13$, $p \leq .05$; $\gamma_7 = 0.17$, $p \leq .05$), thereby supporting H7a/b, while there is no significant effect on customer referrals ($\delta_7 = 0.10$, $p > .10$), thus rejecting H7c. H9b is endorsed as the interaction of social connectedness and social comparison shows a significant negative effect on willingness to pay ($\gamma_9 = -0.15$, $p \leq .05$), but results show no significant interaction effect on customer commitment and customer referrals ($\beta_9, \delta_9 \geq -0.04$, $p > .10$), rejecting H9a/c. Furthermore, the results show a significant interaction effect of expressive freedom and social comparison on customer commitment (H10a: $\beta_{10} = -0.16$, $p \leq .001$). However, this interaction has no significant effect on either willingness to pay or customer referrals (H10b/c: $\gamma_{10}, \delta_{10} \geq 0.02$, $p > .10$).[7]

Furthermore, the majority of the control variables show significant and plausible effects on at least one firm-beneficial user behavior. While customer referrals are infrequent in the context of fitness, they are more numerous for organizational apps in relation to the education context. App usage duration shows a weakly significant positive effect on customer commitment. Additionally, premium users are more willing to pay an extra for an app than users of the free version. Technology experience has positive effects on both customer commitment and referrals. As age increases users recommend gamified services more often, and women show more commitment and recommend more frequently than men.

5. Discussion, implications, and avenues for future research

Many service providers have started to gamify digital services (Hofacker et al., 2016). So far, however, how experiences during gamified service use influence service providers' business outcomes is unclear. The present research delivers insights into how facilitation of motivational user experiences can lead to three firm-beneficial outcomes for providers of gamified services: customer commitment, willingness to pay, and customer referrals. This research follows an experience-centric approach in which user behavior is assumed to result from value co-creation processes between gamified services and users. As the core idea behind gamification is to motivate users to engage in behavior necessary to achieve personal goals, we propose that motivational experiences occurring during service use are key for understanding the firm consequences of gamifying services.

5.1. Discussion

The results of the study are meaningful for service providers who aim to enhance business performance by facilitating motivational experiences. First and foremost, the results demonstrate that motivational user experiences occurring during gamified service use indeed foster firm-beneficial user behavior. Thus, our findings supplement prior research on the impact of gamified services on desired business outcomes (Hamari & Koivisto, 2015b; Jang et al., 2018) by providing insights as to their impact on customer commitment, willingness to pay, and customer referrals. However, not all motivational experiences are equally promising for leveraging these outcomes.

More precisely, facilitating self-development experiences seems to be a silver bullet for providers as it strongly drives all three aspects of firm performance. These results extend previous literature reviews that emphasize that gamified services primarily aid users in achieving their personal goals (e.g., Hamari, Koivisto, & Sarsa, 2014; Koivisto & Hamari, 2019). Thus, nurturing self-development experiences equally benefits the service user and the service provider. Interestingly, social connectedness, expressive freedom, and social comparison seem to be ineffective for enhancing referrals. We assume that users are likely to recommend apps primarily when they nurture experiences of self-development, as users want to share memorable experiences of personal advancement with their peers. In contrast, when apps establish other-related experiences of social comparison and social connectedness, users may not feel impelled to "recruit" new users because an increased user base could inhibit need-satisfying experiences by threatening the intimacy of the community. Likewise, when users strongly experience behavioral freedom to do what they desire to do, they are not moved to invite others to use the app because they may fear constraint of their expressive freedom owing to social norms.

Second, all interactions between motivational user experiences have an impact on firm-beneficial outcomes, except for the interplay between social connectedness and expressive freedom. This finding implies that no motivational boost occurs if the social norms of a group match one's own beliefs. As an ad hoc reasoning, we suggest that feelings of social connectedness lead to an internalization of social norms, so that no increased effect results when one's own values overlap with the prevailing norms (Deci & Ryan, 2000). The remaining interactions between self-development, social connectedness, and expressive freedom exhibit a positive effect on firm-beneficial user behavior. However, particularly noteworthy is that experiencing social comparison in combination with social connectedness or expressive freedom negatively influences firm-beneficial behavior, whereas the simultaneous occurrence of self-development and any of the other three motivational experiences leads to synergistic interactions that enhance desired business outcomes.

Third, our results suggest that there is no interaction between motivational experiences that drives all three business outcomes at once. This finding indicates that firm-beneficial user behavior is multifaceted and, depending on their experience, users behave differently toward desired outcomes. Importantly, interactions containing social connectedness show no significant effect on customer commitment. This result may be explained by the fact that the selected gamified apps (i.e., the self-improvement context) are not primarily made to bond individuals with other users and therefore do not additionally boost the effect on recurrent app use when the gamified service facilitates another user experience at the same time. Further, consistent with the findings of the main effects on customer referrals, only interactions with self-development additionally increase customer referrals. However, strong social comparison does not increase customer referrals when self-development is also very pronounced. This result may occur because users feel no need to invite more users in order to feel challenged when there is already strong competition with other users.

5.2. Research implications

The findings are relevant for service research in general and for research concerned with gamification in marketing in particular. First, drawing on S-D logic, we suggest that user experiences arise from a co-

[7] We performed an additional model, which included customer commitment as an independent variable in equations (2) and (3) to compute the effect on willingness to pay and customer referrals. Customer commitment shows a positive significant effect on both firm-beneficial behavior aspects. These results confirm previous findings about the relations between these variables (e.g., Albert, Merunka, & Valette-Florence, 2013). The effects of the motivational experiences and their interactions on firm-beneficial behavior are similar to the reported model.

creation process between the service provider and the user (Hammedi et al., 2017; Huotari & Hamari, 2017). Our empirical findings underline the need for taking a more user-centric perspective and shifting the focus from designing game elements to facilitating experiences during gamified service use, as experiences determine user behavior.

Second, by relying on the tenets of SDT we advance the understanding of the motivational repercussions of gamified services (e.g., Ryan et al., 2006; Wolf et al., 2018). Specifically, SDT enables us to theoretically underscore that self-development, social connectedness, expressive freedom, and social comparison either satisfy basic psychological needs or induce perceived pressure. These experiences constitute a broad motivational spectrum and promote superior user value by supporting users in achieving their goals. By including perceived pressure in the motivational spectrum we expand prior gamification literature, which is restricted to autonomous or intrinsic sources of motivation (e.g., Mekler et al., 2017; Sailer et al., 2017). Thus, we draw future researchers' attention to the fact that gamified services as extrinsic stimuli not only promote “fun” but also can result in perceived stress. Moreover, our findings verify the validity and reliability of the four dimensions of user experiences of gamified services put forward in prior literature (Wolf et al., 2018).

Third, our study contributes to recent research dealing with gameful experiences (Eppmann, Bekk, & Klein, 2018). While the dimensions of gameful experiences concentrate on experiences more characteristic of games (e.g., absorption), the user experiences examined in our study are not exclusive to games or gamification. Although our motivational user experiences play a central role in explaining the motivational power of games (Przybylski et al., 2009; Ryan et al., 2006), they extend to an explanation of user behavior in other non-game contexts like gamified services. Additionally, we pinpoint that, because service delivery most often occurs in non-game contexts, the experiences emerging during gamified service use might be of a different nature than those occurring while playing a full-fledged game. This broader motivation-centric perspective of user experiences enables us to establish the firm-beneficial consequences of providing gamified services.

Fourth, our results show that contextual as well as user-related variables should be considered when examining user behavior occurring in the context of gamified services. As gamification is applied primarily in digital settings, we agree with previous findings and indicate that the technology experience of the customers should be considered. Further, in line with prior findings our model demonstrates that both age and gender influence behavior in the context of gamified services. Therefore, inclusion of such variables in future studies is important to mitigate omitted variable bias. In addition, the service context variables included in our model show that baseline business outcomes can vary by context, suggesting that predominant firm-beneficial behaviors depend on the service domain.

5.3. Managerial implications

Broadly speaking, our findings justify service providers' inclination to rely on gamified services to nurture additional user value (Hofacker et al., 2016). Facilitating motivational experiences in gamified services can foster retention of valuable customers by enhancing their commitment to a service provider, willingness to pay, and customer referrals. However, our results also demonstrate that undesired consequences for firms can occur when gamified services are directed at “wrong” combinations of user experiences.

First, in line with our suggestion that gamification should be an experience-centered approach, we encourage service providers to shift their focus away from thinking only in terms of game elements when designing gamified services and instead concentrate on facilitating compelling co-created experiences. Experiences can differ depending on the design and implementation of game elements (Morschheuser, Hassan, Werder, & Hamari, 2018), underscoring the notion that focusing on user experiences will be more effective for firms.

Second, our findings suggest that by taking a more fine-grained view of motivational user experiences service managers can better understand user responses to gamified services and how each experience is linked to each component of firm-beneficial user behavior.

Third, all three firm-beneficial user behavior components are not influenced by each motivational experience. Depending on which business outcome is the firm's main priority, different experiences and different combinations must be facilitated. For example, as only one experience is able to trigger recommendations, service managers should consider more effective tools for customer acquisition such as referral reward programs (Ryu & Feick, 2007).

Fourth, the results imply that some combinations of experiences enhance desired business outcomes whereas other combinations harm them. In detail, service providers should design their services to afford the perception of self-development, as it represents an experience that fosters business outcomes alone as well as in concurrence with any other experience. Thus, gamified services that result in self-development benefits drive profit-enhancing user behavior. However, managers should be cautious when facilitating social competition, as blended with other user experiences (i.e., social connectedness, expressive freedom) it can lead to discordant effects and backfire.

5.4. Avenues for future research

This research has some limitations that offer fruitful avenues for future research. First, results show that firm-beneficial behavior can be triggered by motivational user experiences. However, while taking this user perspective, our study does not consider how different game elements used in gamified services trigger these experiences. Thus, we leave it for future research to adopt a service-design perspective and consider motivational experiences as a mediator between game elements and business outcomes. Second, as construct development was beyond the scope of this paper, our approach to capture motivational user experiences could benefit from further refinement (i.e., developing additional experience items) and extensive construct validation. Third, while the motivational experiences examined with respect to SDT cover a broad spectrum of motivation, additional experiences might arise in the context of gamified services that could drive behavior. For instance, a promising avenue might be consideration of experiences that are unique to games. Fourth, situational and personality differences in user preferences may exist, such as user competitiveness or user orientation, which could have an impact on the relationship of motivational experiences and user behavior (Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2016). Finally, future research should identify additional drivers of firm-beneficial outcomes in the context of gamified services to provide service firms with valuable insights to maintain or gain a profitable business.

Appendix Table A.1
Measurement items.

Variable	Measure	Loading
Customer commitment (Adapted from DeWulf et al., 2001)	I am willing to remain loyal to this [App].	
	I am willing to make small sacrifices in order to keep using [App].	
Willingness to pay[a] (Adapted from Pihlström & Brush, 2008)	I will continue to use [App] even if I have to pay for it.	
	I will continue to use [App] even if the subscription payment increases.	
Customer referral (Adapted from Maxham & Netemeyer, 2002)	I would recommend [App] to my friends.	
Self-development (Adapted from Wolf et al., 2018)	The app helps me to …	
	… reach my objectives.	0.86
	… face a challenging task.	0.86
	… develop myself.	0.87

(continued on next page)

Appendix Table A.1 (*continued*)

Variable	Measure	Loading
Social connectedness (Adapted from Wolf et-al., 2018)	The app helps me to …	
	… work together with others.	0.89
	… communicate with others.	0.87
Expressive freedom (Adapted from Wolf et-al., 2018)	The app helps me to …	
	… express my identity.	0.72
	… do things my way.	0.88
Social comparison (Adapted from Wolf et-al., 2018)	The app helps me to …	
	… compete with others.	0.93
	… show my rank within the community.	0.91
App usage duration[b] (Self-developed)	How many months have you been using [App]?	
Premium user[c] (Self-developed)	Are you using a premium version of [App]?	
Technology experience (Adapted from Olsson et al., 2016)	I'm a very experienced user of apps.	

[a] The first (second) item was answered by participants, who use a free (premium) version of the focal app at the time of survey completion.

[b] App usage duration was measured with an open-ended question where participants stated the number of months they have been using the app.

[c] Premium user was measured as a yes/no question.

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