



Designing Inspiration: A Study of the Impact of Gamification in Virtual Try-On Technology

Sebastian Weber^(✉), Bastian Kordyaka, Marc Wyszynski, and Bjoern Niehaves

University of Bremen, Bibliothekstr. 1, 28359 Bremen, Germany
{sebweber,kordyaka,m.wyszynski,niehaves}@uni-bremen.de

Abstract. Creating innovative, user-centered, compelling services to stand out in the competition is more important than ever today to sustain for service provider. In this line, this study investigates the impact of gamification features in virtual try-on applications on user's motivation in the hairdressing domain. More specifically, it examines how gamification elements influence user motivation in the form of inspiration, employing the Stimulus-Organism-Response (S-O-R) model as a theoretical framework. A mixed-method methodology was adopted, beginning with a qualitative study to identify relevant gamification features in the context of virtual try-on applications followed by an cross-sectional online study to exploratory analyze their effects on inspiration. The cross-sectional online study with 201 participants indicates ambivalent influences of gamification features on inspiration and emphasize the complexity of the underlying psychological mechanisms of the gamification concept. Nevertheless, our findings provide valuable insights that can be used in the design of the development of innovative playful artifacts.

Keywords: gamification · inspiration · service encounter · virtual try-on

1 Introduction

In times of globalization, crises and digitization, competition is constantly increasing. Positive unique selling points are therefore a necessary condition for success in the service industry. The use of innovative technology and user-centered design in service encounters is a vital part of addressing this. Current technologies such as artificial intelligence (AI), virtual reality and augmented reality (AR), for example, offer technological opportunities. Furthermore, so-called virtual try-on (VTO) apps are an interesting possibility in times of ever-increasing online shopping and hybrid services (i.e., complimentary service delivery through conventional and technology-enabled environments) [15, 33, 39]. With regard to user-centered design, gamification offers a promising approach to successfully design services that motivate users to use the technology continuously [7, 13, 35].

With regard to technology design, however, it is highly relevant to look closely at how gamification elements affect motivation in detail. A suitable motivational

component here is inspiration, as it has a concrete object reference (e.g., testing a new product) [2, 31, 35]. Research in this regard has been sparse. Hence, this study focuses on this relationship and investigates the consequences of a gamified VTO on users' inspiration. For this we use the service domain of hairdressers, as it is well suited in the context of VTOs due to the visualization options and the potential of a unique selling point. We use the Stimulus-Organism-Response (S-O-R) model as a theoretical framework [16], as it examines technology design (S - Stimulus), psychological processes such as inspiration (O - Organism), and the possible reaction of consumers (R - Response; which we do not research in this study). To this end, we are conducting a cross-sectional study using covariance-based statistics (i.e., regression analysis). In summary, we aim to answer the following research question (RQ):

RQ: What are relevant gamification features to inspire users of a VTO?

With our study, we provide important results for the theoretical context of gamification and inspiration. On a practical level, the results can provide insight into how technology design can contribute to positive unique selling propositions. The rest is structured as follows: First, we describe the theoretical background by describing the context of service encounters and VTOs as well as the theoretical S-O-R framework including gamification and inspiration. Next, we describe our mixed-method methodology. This is followed by Study 1 to identify key gamification elements and Study 2 to investigate the influence of key gamification elements on inspiration. We then discuss the results on a theoretical and practical level and conclude with a short summary.

2 Theoretical Background

2.1 Service Encounter and Virtual Try-On

The design of a service encounter is considered a core issue to meet customers expectation and consequently affects economic outcomes [34]. In this line, the literature provided several definitions. For example, it was defined as a face-to-face interaction between service provider and consumer during the process of service consumption [28]. However, literature also offered a broader view by defining it as “a period of time during which a consumer interacts with a service” [26] which also reflects the other aspects including digital and hybrid service experiences. Based on the changing consumer behavior this viewpoint is needed as a large proportion of users today tend to shop online rather than in a brick-and-mortar stores. In this line, recent technological developments such as Augmented Reality (AR) and Artificial Intelligence (AI) offer new ways to interact with consumers and provide a new service experience that can lead to “spontaneous delights” [1] and as such offer unique selling points in today's competitive environment. Such a service can be vital for both, online as well offline shops. Based on these technologies, big retailers like Ikea or Amazon already offer VTO service experiences [18] to try products virtually (e.g., furniture or fashion) to overcome

the so-called fit and match dilemma [20]. However, this dilemma is not only evident in online shopping but also in other service contexts like hairdressing where customers cannot imagine new products (i.e., hairstyles). Several studies already highlighted the potential of VTOs in this realm and studied the adoption behavior [15, 22, 29, 39]. Nevertheless, when service delivery happens increasingly online or hybrid, it is crucial to furthermore understand how service provider can offer a joyful service experience over time to keep consumers and offer them new inspiration for products. In this regard, gamification seems a viable approach for VTOs that has been neglected so far.

2.2 The Stimulus-Organism-Response Model

To explore and understand a gamified VTO, we leverage the S-O-R framework from environmental psychology [16]. This model suggests that specific stimuli can influence a consumer's cognitive and affective processes (referred to as the organism), which subsequently shape the consumers's actions or reactions. In the realm of a gamified VTO, the stimuli on which we focus are the design elements (i.e., gamification features) with which the consumer interacts. These elements serve as external cues that capture users' attention and engage them in the VTO process (e.g., by nudging them to try new hairstyles). The organism, in this context, represents the users' affective and cognitive processes leading to a response. The cognitive aspect involves users' mental engagement and thought processes while the affective component reflects the users' feelings and emotions. The response could manifest through a range of behaviors and attitudes [11]. Adopting the S-O-R framework offers several benefits for our investigation into the impact of gamification on user inspiration within a VTO context. Firstly, it provides a theoretically grounded approach to assess how gamified elements in VTOs act as environmental stimuli. Secondly, it facilitates an analysis of users' psychological processes of the evocation of inspiration based on gamified VTO interactions. Lastly, it underpins a theoretical basis for evaluating the value of a gamified VTO (in future studies) as a result of these processes in the organism.

Gamification as Stimuli. Gamification typically involves integrating game design elements into non-game contexts to enhance user engagement and motivation [5, 37]. This approach aims to personalize the user experience by aligning with individual preferences and maximizing engagement opportunities. For the purpose of our paper, we follow the definition of Hamari et al. [7] in which gamification is a process of enhancing services with (motivational) affordances to invoke gameful experiences and further behavioral outcomes of a gamified system [7]. Studies have demonstrated the potential of gamification to elevate user engagement and participation [14, 17] in various contexts such as education [4], health [12], marketing [10], and societal impact [6]. Gamification features have typically been grouped into three motivational categories, namely: achievement-related gamification features, immersion-related gamification features, and social-related gamification features [36]. Table 1 defines these dimensions and highlights exemplary gamification features for each dimension based on existing literature [13].

Much literature on gamification has utilized this tri-dimensional structure for categorizing game features [8, 9, 13, 21, 23, 27, 38].

Table 1. Gamification dimensions

Dimension	Definition	Exemplary features
Achievement	Achievement-based features are game design features that are primarily aimed at amplifying the player’s feelings of accomplishment and success within the game	Points, badges, or levels
Immersion	Immersion-related features refer to the various components and aspects within a game or interactive experience that are designed to deeply engage and absorb the player, fostering autonomous exploration and curiosity	Avatars, storytelling, or role-playing mechanics
Social	Social-related features in a game are primarily designed to facilitate and enhance user interactions within the gaming community	Multiplayer, networking features, or competition

In the context of our study, there appears to be a gap in understanding how environmental cues like gamification features relate to inspiration. Previous research has shown that gamification platforms can influence users’ cognitive and affective system, influencing behavioral outcomes in a desired manner [13]. While there is already evidence in the marketing literature that other stimuli (e.g., advertising) can trigger inspiration [2], there is still a lack of research on how gamification features might evocate the motivational state of inspiration and further responses which is especially true in the context of our study of VTO-based services.

Inspiration as Organism. Within the framework of the S-O-R model, the organism encompasses both the affective and cognitive reactions to a stimulus. Understanding these reactions is crucial as they form a core part of the user’s experience in such new service encounters. In our study, we focus on the motivational state of inspiration, which is defined as a motivational state compelling users to realize ideas [19]. This state comprises internal emotional and cognitive response to an external stimulus. Hence, research divides this process of inspiration in “inspired by” and “inspired to” [2, 31, 32]. As we want to understand the process of being inspired, we focus on the state of being “inspired by” (the term inspiration refers to “inspired by” from now on). This state of being inspired by has an elicitor object which induces a specific emotion, especially a self-transcendent emotion like elevation, admiration, or awe [30]. In this study, we focus on this affective change based on the stimuli of gamification elements which is a crucial first step to understand and explain the possible inspirational value of gamified VTOs.

3 Mixed-Methods Approach

To better understand the relationships between gamification features in our VTO app and inspiration, we used a sequential quantitative design [3]. First, in our Study 1, we reduced a rich list of 46 gamification features in a data-driven manner to identify a set of gamification features relevant to the context of our study the VTO app in the service industry. Second, in our Study 2, we tested the influences of the identified relevant gamification features from Study 1 concerning inspiration in an exploratory manner.

4 Study 1: Identifying Relevant Gamification Features

4.1 Methodology

Data Analysis and Procedure. To identify relevant gamification features in the context of the service industry, we followed a two-step procedure combining literature work and judgments of gamification experts and experienced software developers. Initially, we searched the literature for a study comprising a large portfolio of gamification features (step 1). Following this, in a second step, we used the identified portfolio of gamification features and presented it to a group of four participants asking them to evaluate whether or not the corresponding gamification feature could be relevant in the VTO app (step 2). Based on this evaluation, we shortened the list of gamification features.

Data Collection and Participants. Below, we describe our sampling concerning the empirical part of Study 1 (step 2 of the procedure). To conduct step 2, we ensured that the gender and nation of participants differed. Accordingly, we contacted two male-identifying and two female-identifying participants, where the ages ranged from 28 to 41. As a profession, two participants reported to work as a software developers for several years and the other two participants reported to work as a gamification researcher.

4.2 Results

In the following, we illustrate the identification of relevant gamification features based on the two-step approach described in the following.

Step 1: Finding a Gamification Feature Portfolio. Based on a holistic literature search screening reviews related to gamification features, we selected a study from Koivisto and Hamari [13] proposing a portfolio of 46 gamification features (they called digital affordances) that seemed suitable for our study. Within that study the list of gamification features consisted of (a) ten achievement-oriented features (i.e., points, challenges, badges, leaderboards, levels, performance stats, progress, quizzes, timer, and increasing difficulty), (b) seven social-oriented features (i.e., social networking features, cooperation, competition, peer-rating, customization, multiplayer, and collective voting), (c) five immersion-oriented features (i.e., avatar, narrative, virtual world, in-game rewards, and

role play), (d) eight real world-related features (i.e., financial reward, check-ins, motion tracking, physical cards, physical playboards, (e) real world interactive objects, physical objects, and physical dice), and (f) sixteen miscellaneous features (i.e., board games, virtual helpers, virtual currency, reminders, retries, onboarding, adaptive difficulty, game rounds, warnings, penalties, game slogans, funny movies, virtual pets, trading, making suggestions, and virtual objects as augmented reality).

Step 2: Identifying Gamification Features for VTO. Based on the original portfolio of 46 gamification features, we selected the features all four participants agreed upon that were rationale and feasible in a VTO. Only in three cases did different answers occur. We resolved these through a discussion in a joint call following the evaluation, after which no disagreements were left. As a result, we shortened the list to 19 gamification features by excluding 27 of the original portfolio. In particular, the final list of gamification features included (1) Points, Score, XP, (2) Challenges, Quests, Missions, Tasks, Clear Goals, (3) Badges, Achievements, Medals, Trophies, (4) Leaderboards, Rankings, (5) Levels, (6) Performance Stats, Performance Feedback, (7) Social Networking Features, (8) Cooperation, Teams, (9) Competition, (10) Peer-rating, (11) Customization, Personalization. (12) Avatar, Character, Virtual Identity, (13) In-game Rewards, (14) Motion Tracking, (15) Assistance, Virtual Helpers, (16) Virtual Currency, (17) Reminders, Cues, Notifications, Annotations, (18) Making Suggestions, and (19) Virtual Objects as Augmented Reality.

5 Study 2: Analyzing Relationships

5.1 Methodology

Data Analysis and Procedure. To analyze the relationships in our Study 2, we used a cross-sectional survey collecting self-reported data using an online questionnaire. Subsequently, we analyzed the data with covariance-based statistics (i.e., regression analyses) and widespread software applications (i.e., SPSS 28). For this, we tested the exploratory potential of the identified list of relevant gamification features concerning inspiration. For this, we presented the participants in a sequential manner a VTO (<https://www.eyeconic.com/help-me/virtual-try-on?start=90>), a description and exemplary instantiations of gamification features, and correspondings questions (i.e., importance of gamifications features, inspiration, and demographics).

Data Collection and Participants. To test the relationships, we used a digital questionnaire to collect data from technology application users via the crowd-sourcing marketplace Prolific. After cleaning the data and excluding three cases with missing data the final sample consisted of 201 participants. All participants received USD 1.20 as a reward for participating in our study. On a level of characteristics, 51% of participants identified as female (102), followed by 48%

who identified as male (97), and less than 1% reported other as their identification (2). Additionally, 29.4% of participants were between 36 and 50 years old, 62.3% held (at least) a bachelor’s degree (121), and 35% reported their income to be between USD 25.000 and 49.999 a year.

Measurements. Following the best practices of psychometric research, we build a digital questionnaire using empirically validated scales and items from previous research wherever available, asking participants for their self-reported perceptions and behaviors regarding the VTO app.

First, we referred to our list of 19 relevant gamification features of Study 1 to measure gamification. For this, we asked participants, “Please rate the importance of interacting with the gamification feature listed below while using the Virtual Try-On app”. For their responses, we provided a scale ranging from 1, “not important,” to 5, “very important,” in accordance with previous research [36]. Table 2 illustrates the descriptive statistics of all 19 gamification features.

Table 2. Descriptives of Gamification Features.

Number	Gamification features	M	SD
1	Points, Score, XP	2.32	1.32
2	Challenges, Quests, Missions, Tasks, Clear Goals	2.18	1.29
3	Badges, Achievements, Medals, Trophies	1.99	1.26
4	Leaderboards, Rankings	2.12	1.29
5	Levels	2.20	1.32
6	Performance Stats, Performance Feedback	2.86	1.40
7	Social Networking Features	2.37	1.28
8	Cooperation, Teams	2.27	1.23
9	Competition	2.13	1.29
10	Peer-rating	2.59	1.29
11	Customization, Personalization	3.87	1.16
12	Avatar, Character, Virtual Identity	2.81	1.42
13	In-game Rewards	2.50	1.35
14	Motion Tracking	3.91	1.16
15	Assistance, Virtual Helpers	3.50	1.16
16	Virtual Currency	2.06	1.27
17	Reminders, Cues, Notifications, Annotations	2.22	1.26
18	Making Suggestions	3.47	1.04
19	Virtual Objects as Augmented Reality	3.48	1.26

Second, following previous work related to inspiration [31], we measured the reflective scale *inspired by* ($M = 5.50, SD = 1.01, \alpha = .86$) with the aid of five

items each asking participants “How much do you agree with the subsequent statements on a scale from 1 “strongly disagree” to 7 “strongly agree” using the arithmetic mean of the scale. The subsequent Table 3 summarizes all wordings of the items and descriptive values of each item.

Table 3. Inspired by items and descriptives.

Item	Wording	M	SD
1	...my imagination would be stimulated for a new hairstyle	5.54	1.28
2	...I would be intrigued by a new hairstyle	5.53	1.17
3	...I unexpectedly and spontaneously would get new hairstyle ideas	4.82	1.54
4	...my hairstyle knowledge would be broadened	5.68	1.20
5	...I would discover new hairstyles	5.96	1.00

5.2 Results

To test the influences of gamification, we conducted a multiple linear regression analysis specifying the 19 identified *gamification features* and the three demographic variables *gender*, *age*, and *education* as independent variables to explain the dependent variable *inspired by*. Checking the assumptions of linearity, auto-correlation, and multi-collinearity, neither the scatter plots, nor the *Durbin-Watson statistic* ($DW = 2.05$) seemed to be problematic [24]. However, the *Variance Inflation Factor* of the gamification feature *Badges, Achievements, Medals, Trophies* indicated a concerning value above the recommended threshold of 4 with a value of ($VIFs = 4.95$). After discussing this with the group of authors, we decided to exclude the gamification feature and re-run the analysis with only 18 gamification features. Conducting another multiple linear regression analysis with only 19 *gamification features* and the three demographic variables *gender*, *age*, and *education* as independent variables the assumptions of linearity, auto-correlation, and multi-collinearity were met because neither the scatter plots, nor the *Variance Inflation Factors* ($VIFs \leq 3.67$) nor the *Durbin-Watson statistic* ($DW = 2.05$) indicated problematic values [24]. Accordingly, we assumed that our data appeared suitable for regression analysis. The regression equation showed a significant result ($F(21; 179) = 6.86; p < .001$) that explained 38% of the variance of *inspired by*. Furthermore, the four predictor weights of the gamification features *customization*, *personalization* ($\beta = .17, p < .05$), *virtual currency* ($\beta = -.17, p < .05$), *reminders*, *cues*, *notifications*, *annotations* ($\beta = -.19, p < .05$), and *making suggestions* ($\beta = .22, p < .01$) as well as the two demographic variables *gender* ($\beta = -.13, p < .05$) and *age* ($\beta = .21, p < .001$) played a significant role in explaining *inspired by* (all others $p \geq .06$).

6 Discussion

6.1 Key Findings

We summarize the insights of our study with the subsequent three points:

- First, the gamification features customization and suggestions both had an positive influence on inspired by.
- Secondly, to our surprise, the gamification features virtual currency and reminders both had an negative influence on inspired by.
- Third, female and older participants were more likely to be inspired by gamification design.

6.2 Theoretical and Practical Implications

Based on our results, several implications can be derived that are relevant for existing UX and HCI research on a theoretical level. We will discuss some of them below. First of all, it should be noted that the results of the influence of the gamification feature contain ambivalent results (contrary to our expectations). On the one hand, the two gamification features customization and suggestions showed a positive influence on inspiration, while virtual currency and reminders had a negative influence. This highlights that gamification needs to be tailored and has not always mono-causal influences [25]. In terms of content, we summarize these results in such a way that opportunities to involve potential users in the design process are of particular relevance in the case of novel VTOs, as they can reduce uncertainties with regard to the final service and, thus, foster the inspirational potential intention to try new products. We explain the negative influence of the two gamification features virtual currency and reminders by the hedonic nature of the VTO hairdressing service and the rather utilitarian prompts of the two features. On this base, we see these results as an indication to critically reflect on existing gamification taxonomies' in order to improve the overall user experience and contribute to the success of interactive systems [12]. Furthermore, the findings that female and older participants were more likely to be inspired by gamification design prompt a reexamination of psychological and cognitive development theories to understand why certain gamification elements appeal more to older individuals. This could involve exploring cognitive aging processes and the impact on motivational and inspirational factors.

In addition, our results indicate added value for game and app developers to prioritize and invest in customization features and intelligent suggestion algorithms. This can increase engagement, satisfaction and overall enjoyment of the game or app experience. In summary, the practical implications of these insights are manifold and can be applied across different industries and sectors. Incorporating customization and suggestion features into gamification can lead to engaging, personalized and inspiring user experiences, whether in gaming, education, corporate training, health, marketing or other interactive contexts.

6.3 Limitations and Outlook

As in any empirical study, the procedure in our study was not possible without limitations. We would like to list some of these below in order to give the reader the opportunity to adequately classify our results. Firstly, and this is certainly the most substantial challenge, we are currently in the process of building the technological artifact and had to refer to a hypothetical playful artifact in the context of our study, which naturally limits the empirical insights. Furthermore, we collected our sample via Prolific for reasons of feasibility. Future studies should compare the results of our study with an offline sample with an existing technological artifact. Second, we chose a cross-sectional approach for our study. As a further empirical finding, future studies should look at artifact usage over time. In addition, some limitations arise in connection with our chosen theoretical framework, the S-O-R model. Thus, in the context of our study, we limited ourselves to the relationship between the S in the form of gamification features and the O in the form of psychological inspiration. Further studies can integrate additional components of the psychological processes of the and the resulting consequences of the R in their work, for example with regard to economic consequences such as WoM.

7 Conclusion

In our study, we investigated the relationship between gamification features and inspiration in the context of service industries and VTOs for the first time. Building on an S-O-R framework, our results indicate ambivalent influences of gamification features on inspiration and emphasize the complexity of the underlying psychological mechanisms of the gamification concept. Nevertheless, our findings provide valuable insights that can be used in the design of the development of innovative playful artifacts.

Acknowledgments. This research and development project is funded by the German Federal Ministry of Education and Research (BMBF) within the “The Future of Value Creation - Research on Production, Services and Work” program and managed by the Project Management Agency Karlsruhe (PTKA). The authors are responsible for the content of this publication.

Disclosure of Interests. Nothing to declare.

References

1. Bitner, M.J., Brown, S.W., Meuter, M.L.: Technology infusion in service encounters. *J. Acad. Mark. Sci.* **28**(1), 138–149 (2000)
2. Böttger, T., Rudolph, T., Evanschitzky, H., Pfrang, T.: Customer inspiration: conceptualization, scale development, and validation. *J. Mark.* **81**(6), 116–131 (2017)
3. Cameron, R.: A sequential mixed model research design: design, analytical and display issues. *Inter. J. Multiple Res. Approach.* **3**(2), 140–152 (2009)

4. Caponetto, I., Earp, J., Ott, M.: Gamification and education: A literature review. In: European Conference on Games Based Learning, vol. 1, p. 50. Academic Conferences International Limited (2014)
5. Deterding, S., Dixon, D., Khaled, R., Nacke, L.: From game design elements to gamefulness: defining "gamification". In: Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, pp. 9–15 (2011)
6. Douglas, B.D., Brauer, M.: Gamification to prevent climate change: a review of games and apps for sustainability. *Curr. Opin. Psychol.* **42**, 89–94 (2021)
7. Hamari, J., Koivisto, J., Sarsa, H.: Does gamification work?—a literature review of empirical studies on gamification. In: 2014 47th Hawaii International Conference on System Sciences, pp. 3025–3034. IEEE (2014)
8. Hamari, J., Tuunanen, J.: Player types: A meta-synthesis (2014)
9. Hassan, L., Rantalainen, J., Xi, N., Pirkkalainen, H., Hamari, J.: The relationship between player types and gamification feature preferences (2020)
10. Huotari, K., Hamari, J.: Defining gamification: a service marketing perspective. In: Proceeding of the 16th International Academic MindTrek Conference, pp. 17–22 (2012)
11. Jacoby, J.: Stimulus-organism-response reconsidered: an evolutionary step in modeling (consumer) behavior. *J. Consumer Psychol.* **12**, 51–57 (12 2002)
12. Jahn, K., et al.: Individualized gamification elements: the impact of avatar and feedback design on reuse intention. *Comput. Hum. Behav.* **119**, 106702 (2021)
13. Koivisto, J., Hamari, J.: The rise of motivational information systems: a review of gamification research. *Int. J. Inf. Manage.* **45**, 191–210 (2019)
14. Landers, R.N., Bauer, K.N., Callan, R.C.: Gamification of task performance with leaderboards: a goal setting experiment. *Comput. Hum. Behav.* **71**, 508–515 (2017)
15. Lavoye, V., Sipilä, J., Mero, J., Tarkiainen, A.: The emperor's new clothes: self-explorative engagement in virtual try-on service experiences positively impacts brand outcomes. *J. Serv. Mark.* **37**(10), 1–21 (2023)
16. Mehrabian, A., Russell, J.A.: An approach to environmental psychology (1974)
17. Mekler, E.D., Brühlmann, F., Tuch, A.N., Opwis, K.: Towards understanding the effects of individual gamification elements on intrinsic motivation and performance. *Comput. Hum. Behav.* **71**, 525–534 (2017)
18. Mohammadi, S.O., Kalhor, A.: Smart fashion: a review of ai applications in virtual try-on & fashion synthesis. *J. Artif. Intell.* **3**(4), 284 (2021)
19. Oleynick, V.C., Thrash, T.M., LeFew, M.C., Moldovan, E.G., Kieffaber, P.D.: The scientific study of inspiration in the creative process: challenges and opportunities. *Front. Hum. Neurosci.* **8**, 436 (2014)
20. Pachoulakis, I., Kapetanakis, K.: Augmented reality platforms for virtual fitting rooms. *Inter. J. Multimedia Appli.* **4** (2012)
21. Peng, W., Lin, J.H., Pfeiffer, K.A., Winn, B.: Need satisfaction supportive game features as motivational determinants: an experimental study of a self-determination theory guided exergame. *Media Psychol.* **15**(2), 175–196 (2012)
22. Qasem, Z.: The effect of positive tri traits on centennials adoption of try-on technology in the context of e-fashion retailing. *Int. J. Inf. Manage.* **56**, 102254 (2021)
23. Rohan, R., Pal, D., Funilkul, S.: Mapping gaming elements with gamification categories: Immersion, achievement, and social in a mooc setting. In: 2020 14th International Conference on Innovations in Information Technology (IIT), pp. 63–68. IEEE (2020)

24. Savin, N.E., White, K.J.: The durbin-watson test for serial correlation with extreme sample sizes or many regressors. *Econometrica: J. Econometric Soc.*, 1989–1996 (1977)
25. Schöbel, S., Janson, A.: Is it all about having fun?-developing a taxonomy to gamify information systems. In: *ECIS*, p. 60 (2018)
26. Shostack, L.G.: *Planning the Service Encount in The Service Encounter*, pp. 243–254. Lexington Bookss, Lexington, MA (1985)
27. Snodgrass, J.G., Dengah, H.F., Lacy, M.G., Fagan, J.: A formal anthropological view of motivation models of problematic mmo play: achievement, social, and immersion factors in the context of culture. *Transcult. Psychiatry* **50**(2), 235–262 (2013)
28. Solomon, M.R., Surprenant, C., Czepiel, J.A., Gutman, E.G.: A role theory perspective on dyadic interactions: the service encounter. *J. Mark.* **49**(1), 99–111 (1985)
29. Tandon, U., Ertz, M.: Modelling gamification, virtual-try-on technology, e-logistics service quality as predictors of online shopping: an empirical investigation. *Current Psychol.* (2023)
30. Thrash, T., Moldovan, E., Oleynick, V., Maruskin, L.: The psychology of inspiration. *Soc. Personality Psychol. Compass* **8** (2014)
31. Thrash, T.M., Elliot, A.J.: Inspiration as a psychological construct. *J. Pers. Soc. Psychol.* **84**(4), 871 (2003)
32. Thrash, T.M., Elliot, A.J.: Inspiration: core characteristics, component processes, antecedents, and function. *J. Pers. Soc. Psychol.* **87**(6), 957 (2004)
33. Wang T., Keng-Jung Yeh, R., Yen, D.C., Nugroho, C.A.: Electronic and in-person service quality of hybrid services. *Serv. Indus. J.* **36**(13-14), 638–657 (2016)
34. van Dolen, W., Lemmink, J., de Ruyter, K., de Jong, A.: Customer-sales employee encounters: a dyadic perspective. *J. Retail.* **78**(4), 265–279 (2002)
35. Weber, S., Klassen, G., Wyszynski, M., Kordyaka, B.: Illuminating the predictive power of gamification to inspire technology users. In: *Mensch und Computer 2023 - Workshopband* (2023)
36. Xi, N., Hamari, J.: Does gamification satisfy needs? a study on the relationship between gamification features and intrinsic need satisfaction. *Int. J. Inf. Manage.* **46**, 210–221 (2019)
37. Xi, N., Hamari, J.: Does gamification affect brand engagement and equity? a study in online brand communities. *J. Bus. Res.* **109**, 449–460 (2020)
38. Yee, N., Ducheneaut, N., Nelson, L.: Online gaming motivations scale: development and validation. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 2803–2806 (2012)
39. Zhang, T., Dr Wang, W.Y.C., Cao, L., Wang, Y.: The role of virtual try-on technology in online purchase decision from consumers' aspect. *Internet Res.* **29** (2019)