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The effect of gamification elements on user buying intention in an on-demand service platform

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Abstract

Gamification increases user interaction in many industries, including on-demand services. Gamification's effects on on-demand service platforms need further study. This study explores gamification elements' influence on user buying intention on an on-demand service platform. This research extends the theoretical model of the Technology Acceptance Model by incorporating gamification elements, satisfaction, and engagement. Data were collected by survey and analyzed with SEM GSCA. This study found that points and rewards positively and significantly indirectly impact user buying intention. This study expands gamification research to the on-demand service platform sector, needing more scientific research.

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1. Introduction

Gamification is a design concept that uses game components in service to encourage user engagement and value creation [1–4]. Gamification seeks to motivate users towards behaviors targeted by the system utilizing gamification, such as using the system or desire to make purchases, and as a result, increase the quantity and quality of their work output [2,5]. The most popular features of the gamified system are rewards, points, badges, levels, and leaderboards [6]. Gamification consists of three key components [3], gamification elements utilized in a system have a psychological impact, and game-like experiences will have behavioral impacts. The terminology gamification

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elements refer to various game features and techniques that induce game-like experiences in a system [2]. Psychological impacts are commonly referred to as the psychological phenomena that games and gamification are intended to foster [2]. The behavioral impacts of gamification pertain to the activities and behaviors that the gamification system enables [2]. Gamification has gained momentum and is becoming increasingly popular because of the upbeat forecasts made by Gartner and IEEE that most businesses and organizations would soon implement it [2]. Thus, numerous industries are intrigued by the potential for gamification to raise interest and involvement in a variety of activities.

Over the past decade, digital technology has dramatically changed how platforms generate value for users, especially by leveraging data assets and reducing the need for physical infrastructure. On-demand service (ODS) platforms are emerging as systems enabling customers to access services whenever and wherever they are needed [7]. ODS has three key characteristics: high availability, responsiveness, and scalability. A high level of availability characterizes ODS. Three parameters of quantity/duration, time, and location determine this availability [7]. Some ODS applications focus on a single service, such as Netflix on entertainment services or Uber on transportation services. In line with users' many needs, ODS applications currently provide various categories of services in just one application, such as Gojek or Grab, which provide transportation services, logistics, food, shopping, and payment. Minister of National Development Planning Bambang Brodjonegoro stated that ODS is one of the digital industries with the quickest growth rate in Indonesia [8]. The ODS platform uses gamification elements to increase user buying intention, mostly they use gamification elements such as points, levels, and rewards.

Only some studies still discuss this ODS platform, especially in gamification. This study examines how gamification affects ODS platform behavior, specifically buying intention (BI). In addition, this study also assesses the effect of using gamification elements on the psychological impact of the ODS platform. The psychological impact used takes from the Theory Acceptance Model (TAM) in the form of perceived enjoyment (PE) and perceived usefulness (PU) which is then developed with the addition of satisfaction (SF) and engagement (EN) variables. This study presents the following research questions; (1) Do gamification elements (PO, LE, RE) affect the acquisition of user benefits (EN, PE, PU, SF) on the ODS platform? (2) Do gamification elements (PO, LE, RE) affect user buying intention on the ODS platform?

2. Theoretical framework and hypothesis development

2.1. Gamification elements

Points, also called experience points, are numerical feedback given when a user performs specific actions. [9]. Marketers and product managers have popularly used gamification to increase engagement [10]. By including points, DevHub (www.devhub.com) improved the percentage of users that completed online activities from 10% to 80% [11].

H1: *Point has the effect of increasing engagement in the on-demand service application.*

Positive and statistically significant indirect effects of gamification demonstrate the importance of perceived enjoyment in customer interaction with online sites. Adding gamification elements like points, badges, and leaderboards to online shopping websites enhances user enjoyment [12].

H2: *Point has the effect of increasing perceived enjoyment in the on-demand service application.*

The perceived usefulness variable is positively influenced by the gamification features of points, badges, and leaderboards [12]. Gamification elements strongly influence consumers' perceived usefulness and effort when using online shopping sites.

H3: *Point has the effect of increasing perceived usefulness in the on-demand service application.*

As for achievement-related characteristics (badges, points, leaderboards), they show the strongest correlation with enjoyment. The findings indicate that gamification can significantly impact the satisfaction of service users, particularly about achievement-related gamification elements [13].

H4: *Point has the effect of increasing satisfaction in the on-demand service application.*

Levels support users in tracking their progress through system goals over time [9]. The use of progression-oriented gamification elements (such as levels) [2] positively influences engagement both directly and indirectly [14].

H5: *Level has the effect of increasing engagement in on-demand service applications.*

Zhang *et al.* [15] confirmed the significant role of badge enhancement in stimulating the emotional reaction of enjoyment. According to the research, the concept of badge upgrades is comparable to that of levels, i.e., the process utilized in a gated system to unlock badges by accumulating a certain number of likes. According to van der Lubbe *et al.* [16] badges can replace the game-level system.

H6: *Level has the effect of increasing perceived enjoyment in on-demand service applications.*

The research done by Garcia-Iruela *et al.* [17] shows the assessment of several gamification elements by students around 20 years old and in college. Three experiences on the learning platform with different durations yielded levels as one of the most helpful gamification elements.

H7: *Level has the effect of increasing perceived usefulness in on-demand service applications.*

Progress systems in gamification, such as levels, reflect rewards and incentives tied to the player's activities inside the gamified environment. They can elicit emotions, such as a level-up, resulting in player satisfaction if the actual consequences of attaining that level confirm a prior assumption [18].

H8: *Level has the effect of increasing satisfaction in the on-demand service application.*

Rewards are any rewards that the user wins for their actions. These game elements include bonuses, combinations, and boosters, as examples [9]. Rewards are usually given as long-term feedback, such as after completing some tasks or winning a competition [19]. A survey by The Manifest [20] of over 500 smartphone owners revealed that Starbucks has the most popular restaurant loyalty app or rewards program. With 14.2 million members, up 11% from the prior year, the Starbucks Rewards program played a vital role in this rise [21].

H9: *Rewards have the effect of increasing engagement in on-demand service applications.*

Choi *et al.* [22] explained that the anticipation level for a reward affects the psychological feeling of a pleasurable experience. According to Montola *et al.* [23], an achievement system (which incorporates gamification components like rewards) is a practical choice for enhancing the enjoyment of system users.

H10: *Rewards have the effect of increasing perceived enjoyment in on-demand service applications.*

During the cheese festival field study, a customized mobile app called "WantEat" was developed to increase user feedback. This study utilized gamification elements such as points, levels, leaderboards, missions, and rewards. Stats and subjective evaluations of the application revealed that its usability, utility, efficacy, and user engagement all received high marks [24].

H11: *Reward has the effect of increasing perceived usefulness in on-demand service applications.*

According to Arakawa *et al.* [25], gamification can satisfy several desires, namely power, curiosity, status, saving, and acceptance. One of the typical methods for satisfying desires in gamification is rewards.

H12: *Rewards have the effect of increasing satisfaction in on-demand service applications.*

2.2. Psychological impacts

User engagement in human-computer interaction refers to how users interact with engaging technology [26]. Eisingerich *et al.* [27] explain that each gamification principle affects sales and engagement of gamified apps. Customer engagement produces a significant relationship with purchases in gamified apps.

H13: *Engagement has the effect of increasing buying intention in the on-demand service application.*

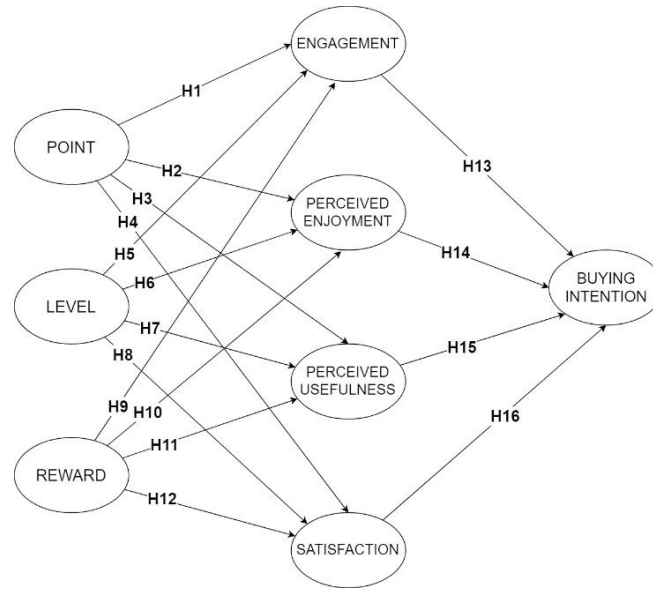


Fig. 1. The research model.

Venkatesh *et al.* [28] state that perceived enjoyment is the amount to which utilizing a specific system is viewed as delightful, independent of the performance implications of using the system. Due to the hedonic and pleasure-oriented nature of gamification algorithms, consumers' spontaneous purchases will rise as their level of enjoyment rise [29].

H14: *Perceived enjoyment has the effect of increasing buying intention in the on-demand service application.*

Systems with a high perceived usefulness value are systems where users believe a positive relationship exists between use and performance [30]. Research by Hsieh *et al.* [31] assessed the importance of online shopping behavior for university students in Taiwan. Hence, the experience of online purchasing moderates the link between perceived usefulness and behavioral intentions.

H15: *Perceived usefulness has the effect of increasing buying intention in the on-demand service application.*

Consumer satisfaction refers to the consumer's psychological state and consuming experience following a purchase [32]. Bhattacharjee [33] states that the main factor influencing the intention to continue is satisfaction with using an information system.

H16: *Satisfaction has the effect of increasing buying intention in the on-demand service application.*

2.3. Behavioral impacts

The outcomes of consumers' evaluation of the application's quality, their search for information, and their product evaluation are referred to as their buying intention, which is a significant predictor of their purchasing behavior [34]. Buying intention reflects the consumer's desire to purchase the application.

The hypothesis and proposed model can be seen in Fig. 1.

3. Research methodology

A survey of users of one of the ODS apps in Indonesia was conducted to collect data for this study. The survey was conducted from September 2022 to January 2023. The criteria for the questionnaire is that the minimum point limit owned by the respondent is 50 points—the criteria to ensure that respondents have made transactions on the

Table 1. Structural model results.

Hypotheses	Path	Estimate	SE	CR	95%CI		Support
H1	Point→EN	0,199	0,083	2,398	0.051	0.37	Yes
H2	Point→PE	0,225	0,083	2,711	0.063	0.382	Yes
H3	Point→PU	0,316	0,076	4,158	0.173	0.471	Yes
H4	Point→SF	0,255	0,08	3,188	0.103	0.416	Yes
H5	Level→EN	-0,063	0,101	-0,624	-0.266	0.127	No
H6	Level→PE	0,15	0,103	1,456	-0.061	0.345	No
H7	Level→PU	0,036	0,087	0,414	-0.127	0.208	No
H8	Level→SF	0,067	0,091	0,736	-0.117	0.238	No
H9	Reward→EN	0,214	0,086	2,488	0.044	0.372	Yes
H10	Reward→PE	0,175	0,108	1,62	-0.032	0.392	No
H11	Reward→PU	0,284	0,087	3,264	0.108	0.445	Yes
H12	Reward→SF	0,301	0,088	3,42	0.123	0.464	Yes
H13	EN→BI	0,29	0,054	5,37	0.19	0.402	Yes
H14	PE→BI	0,099	0,073	1,356	-0.07	0.236	No
H15	PU→BI	0,266	0,085	3,129	0.11	0.443	Yes
H16	SF→BI	0,25	0,092	2,717	0.062	0.425	Yes

ODS platform more than once. From the survey conducted, a total of 312 respondents were obtained, and 257 respondents met the criteria. In the survey questionnaire, 27 statements indicate the variables used in this research. In the survey point variable indicators taken from [35,36], level variable indicators taken from [15], reward variable indicators taken from [27], PE variable indicators taken from [28], PU variable indicators taken from [30], SF variable indicators taken from [32], EN variable indicators taken from [37], and BI variable indicators taken from [12]. A Likert scale with a range of 1 (Strongly disagree) to 5 (Strongly agree) is used to evaluate the current statements. Then the existing data was processed using GSCA SEM (Generalized Structured Component Analysis Structural Equation Modelling).

4. Result

Testing on GSCA resulted in a FIT value of 0.579. This indicates that the developed model can account for 57.9% of all existing variables. Several variables outside of this model account for the remainder. This interpretation also applies to the AFIT value, which gets a value of 0.574. Furthermore, the GFI value gets a value of 0.982, and SRMR gets a value of 0.057. When the sample size is > 100 , $GFI \geq 0.93$ or $SRMR \leq 0.08$ indicates an acceptable fit [38]. So, the model in this study is a fit.

Validity testing can be seen using the AVE, loading, and weight estimates. The test implementation on GSCA resulted in a loading estimate value above 0.7, an AVE value above 0.5, and a statistically significant weight estimate on all indicators. This shows that the existing indicators are valid and significant [39]. Furthermore, the R^2 value obtained in this model ranges at a low level, namely in the range of 0.106 (EN) to 0.499 (BI). This means that the psychological impact variables in this research model cannot explain buying intention on the ODS platform. Table 1 shows the estimated path coefficients. Most hypotheses have positive and statistically significant values (the CI interval does not contain the value 0). Six hypotheses are insignificant or rejected, namely H5, H6, H7, H8, H10, and H14.

5. Discussion

According to the hypothesis test results, gamification elements have a positive and significant indirect effect on users' intentions to make purchases. This impact is obtained through perceived usefulness, satisfaction, and engagement. Level and reward gamification elements have insignificant results on perceived enjoyment, making perceived enjoyment also have insignificant results on purchase intention. In other psychological impact variables (perceived usefulness, satisfaction, and engagement), there is only one insignificant gamification element: level. Thus, the level gamification element on the ODS platform is an element that has no significant effect.

This research shows that TAM is still relevant to the adaptation to new technology in the ODS platform. Extending the TAM model, this study contributes to the prior research on gamification and buying intention. The results demonstrate that the model remains reliable in adopting new technologies on ODS platforms. In addition, the improved model identifies beneficial aspects that can assist ODS service developers in developing gamification strategies to boost user transactions. This study demonstrated that gamification influences consumer BI. Furthermore, it was determined that EN, PU, and SF are significant mediators between gamification elements and BI. This also highlights the importance of EN, PU, and SF in the transaction execution decisions of ODS application users.

This research confirms that EN is one-factor mediating gamification's effect on user BI. EN is essential for user participation in the application [26]. This is also supported by the research of De Canio et al. [40] and Eisingerich et al. [27], which states that gamification affects user EN, which will impact BI. Another factor that is proven to affect user BI in this study is PU. This study provides results that the existing gamification point, and reward elements are following user expectations and have a usefulness impact on users. This feeling then encourages users to make transactions on the ODS platform. This statement is also in line with the study's results [36], which states that PE positively affects BI among Generation X and millennials. Furthermore, this study also states that SF has a significant positive impact on BI. In research in the field of social commerce, a person's satisfaction with the online shopping experience and then their intention to buy increases [41]. Individuals prefer to shop using platforms that greatly satisfy them and make them loyal customers. On the other hand, PE does not significantly impact BI. This is similar to the results of Rodrigues et al. study [42], which stated that PE does not have a positive influence on customer intention to use gamified business applications.

From the research results, the use of gamification elements such as points, levels, and rewards are useful for increasing user purchase intentions in the ODS application. Although the level element does not have a significant impact on increasing user buying intentions, ODS service providers can improve the existing level mechanism by extending the duration of collecting points to level up. In addition, a decrease in the minimum points required to level up can also be implemented to encourage users to continue using the application. ODS service providers can focus on creating applications that make users spend a long time on them, as well as applications that are easy and fast to use for transactions. This is because fun apps do not attract users' purchase desires. Service providers can add check-in features as a tool to increase user engagement. The addition of points after check-in is expected to provide user satisfaction. The feature of redeeming points for prizes can also be implemented to make users feel the usefulness of the points that have been collected.

6. Conclusion

This research shows that gamification elements of points and rewards can increase the buying intention of ODS application users. For ODS service provider companies they can improve the existing level mechanism to increase user buying intention significantly. This research is limited because it was conducted exclusively on users of one of the ODS applications in Indonesia. So that the results obtained may be different if using other ODS applications or in other countries. Future research can examine gamification elements on several ODS platforms to determine what kind of mechanism can be beneficial. In addition, future research can also examine the adverse effects of implementing gamification on the ODS platform. Finally, future research can also add moderating variables such as age or gender to determine the benefits of gamification in the ODS platform based on market segmentation.

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