

Elaborating Gamification Model for PLN Mobile Application to Increase Customer Engagement

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Abstract

PLN Mobile is one of the transformation programs in PT PLN (Persero) that is dedicated to giving single access for all customer needs related to electricity and to strives for business process streamlining in customer services. However, customer engagement di PLN Mobile is still very low. A review of the last decade's literature indicates that gamification is one of the application features that is effective to increase customer engagement. Therefore, this research objective is to elaborate gamification models for the PLN Mobile application that is appropriate to its customer needs. This research starts with a benchmark on other applications and the result shows that the gamification models applied can be classified into three categories of character i.e: immersion, achievement, and social interaction. The next step is the development of a model with gamification characters, service quality, reward program, customer engagement, and customer loyalty as the variables. A customer survey then is executed to test the model. An analysis of the 288 valid responses brings the conclusion that customer engagement is affected significantly by achievement and social interaction type of gamification. However, the strongest effect comes from service quality and reward program. Customer loyalty is strongly affected by customer engagement.

Keywords: mobile application, gamification, customer engagement, benchmark, survey

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1. Introduction

1.1. Background

The vision of PT PLN (Persero) is 'to be the leading electricity company in Southeast Asia and #1 customer choice for energy solutions. This vision today is manifested on the company transformation in four main areas, i.e. (1) conducting electricity business and other related fields, oriented to customer satisfaction, company members, and shareholders; (2) making electricity as a medium to improve the quality of people's lives; (3) keeping electricity

as driving economic activity; and (4) conducting business activities that are environmentally sound. The first focus, that is related to customer satisfaction, is realized by the development of PLN Mobile application (PT PLN (Persero), 2023).

PLN Mobile is dedicated to giving a better service experience to the customer through single access for all customer needs related to electricity. PLN Mobile does not only integrate and simplify the separated services, but furthermore, it strives for business process streamlining in customer services. Today, the PLN Mobile is used to (1) reduce time loss by connecting the financial processes directly to PLN account; (2) give excellent services to PLN customers; (3) consolidate all the business processes related to faults handling; (4) monitor the status of customer complains.

If all the functions of PLN Mobile are put to good use by the customers, PT PLN (Persero) can use the transaction data collected from the PLN Mobile for the company business analytics, to support effective improvement and development in the company. Up to August 2023, around 42.74 of 70.67 million of PLN customers (68.48%) have downloaded the application. However, most of them are inactive users. The reason of not using the PLN Mobile is that the PLN customers are still accustomed by the conventional (non-digital) services, and the PLN Mobile is failed to attract them.

During the 7 years since it is launched in 2016, PLN Mobile has been being improved to get more and more customers engagement, by for examples: (a) collaboration with some banks to use financial technology; (b) management notifications; (c) customer reviews and comments feature; (d) push the inactive customers; (e) participation rewards (gift and points); (f) feedback improvement for customer reviews and complaints; and (g) gamification. However, as mentioned previously, the customer engagement is still low.

As a touted program expected to strengthen PT PLN (Persero), PLN Mobile should be improved. Based on the literature review, gamification is one of the most attractive application features (Deterding et al., 2011; Berger et al., 2017; Kotler et al., 2018; Xi & Hamari, 2020). Thus, among all the features tried to applied in PLN Mobile, gamification can be elaborated further to be applied. This study aims to find gamification model appropriate to be developed for PLN Mobile that is predicted can be drive the increase of customer engagement.

The results of this study are expected to help PT PLN (Persero) to improve the customer engagement in PLN Mobile, and further, to get the benefit of using PLN Mobile, for instance, increasing efficiency through digital process, and getting the valuable data of customer behavior and needs.

The model of customer engagement in terms of gamification developed in this study can be a new model that enrich the previous customer engagement models that already developed in many fields. A case of PLN Mobile, a mobile application of a state-owned company in Indonesia, will also give unique viewpoint for other researchers that are interested in researches on customer engagement, gamification, or mobile application.

1.2. Literature review

According to Bening & Kurniawati (2019) and Miryam & Antonio (2022), marketing media content give impact on customer engagement. Bening & Kurniawati (2019) concern to the effect of marketing content to customer engagement in a marketplace. Similarly, but in different object, Miryam & Antonio (2022) learn about how customer engagement in fitness club contributes to continuous usage intention and positive WOM, and how it is affected by

the factors in social media content i.e. social interaction, service provider interaction, self-concept, functional information, and entertaining information.

Related to customer behavior and company or product characteristic, Hargyatni et al. (2022) deduce that customer engagement in B2B service industry is primary affected by internal factors of customer, including customer satisfaction and customer emotion, and is secondary affected by company or product factors, i.e. convenience, type of firm, nature of industry, level of involvement, and brand value. Meanwhile, customer satisfaction and emotion comes from customer experience. A positive customer experience will create high satisfaction and positive emotion, and accordingly, resulting customer engagement. The other study performed by Nugroho & Suprpti (2022) in an airline industry during the period of COVID-19 pandemic, concludes that customer engagement is the main contributor for customer loyalty, and it is influenced by customer satisfaction and brand experience.

From a comprehensive literature review, Hollebeek et al. (2019) construct a framework, in which customer knowledge sharing, customer resource integration, and customer learning have intersection one to another. The intersection between customer knowledge sharing and customer resource integration is customer co-creation. The intersection between customer resource integration and customer learning is customer individual resource development. The intersection between customer learning and customer knowledge sharing is customer interpersonal resource development. Overall, the intersection among customer knowledge sharing, customer resource integration, and customer learning is customer engagement.

Today, in the era of extensive use of digital media, one of the most influencing factors to customer engagement is gamification (Robson et al., 2016; Vitkauskaitė, & Gatautis, 2018; He, 2021; Shahisa, 2022; Sulistiawati et al., 2022; Habib et al., 2023). Deterding et al. (2011) define gamification as the use of game design elements in non-game contexts. Interactivity and challenges in the game increase emotional and cognitive engagement (Berger et al., 2017).

Robson et al. (2016) discuss the effect of gamification on customer engagement based on player type, through theoretical analysis. The effect of gamification on customer engagement is also studied by Vitkauskaitė, & Gatautis (2018), with flow state as moderator variable. This study is based on a survey to people who has experienced gamification. The gamification variable is presented by two items, i.e. game mechanic and game component, the customer engagement is presented by three items, i.e. cognitive, emotional, and behavioral. The results show that the gamification influences the customer engagement through flow state. Related to the flow state of user, He (2021) develops a model of the relationship between gamification elements and customer engagement in hospitality industry. To choose which elements being effectively used, He (2021) suggest a further research on users' perception and behavior.

Models and frameworks on the perception and behavior of customers related to gamification are carried out by He (2021), Sulistiawati et al. (2022), Shahisa (2022), and Habib et al. (2023). He (2021) develops conceptual framework of how gamification influence customers. The framework says that gamification creates motivational affordance, then motivational affordance produces psychological outcomes, and accordingly the psychological outcomes will yield behavioral outcomes. Sulistiawati et al. (2022) proof that marketing content, gamification, and electronic WOM in a marketplace strongly affect customer engagement in a model. Other model studied by Shahisa (2022) presents the relationship between gamification and customer engagement, experience, satisfaction, and loyalty in an online city transportation service. The results show that gamification strongly affects customer experience, and customer experience strongly affects customer engagement. Other model

illustrating interaction among customer engagement, positive emotion, intrinsic motivation, repurchase intention, and gamification in marketplace, is discussed by Habib et al. (2023). Using SEM modeling, gamification is proven to strongly contribute directly to customer engagement, positive emotion, intrinsic motivation.

In terms of how gamification relates with internal customer factors, there are many kinds of gamification elements can be created, as reviewed by Seaborn & Fels (2015) dan He (2021). Some of the gamification elements discussed in previous researches are points, levels, and badges (Sigala, 2015; Vitkauskaitė, & Gatautis, 2018; Xi & Hamari, 2020), quests, tasks, challenges (Domínguez et al., 2013; Patricio et al., 2020), leaderboard (Domínguez et al., 2013; Sigala, 2015; Xi & Hamari, 2020), avatars (Xi & Hamari, 2020); narrative or storytelling (Xi & Hamari, 2020); and teams, messages, social networks (Patricio et al., 2020; Xi & Hamari, 2020).

From the researches discussing gamification elements mentioned above, it can be summarized that the elements involved in gamification depends on the context. For example, the educational product or services tends to use challenges and badges (Domínguez et al., 2013; Seaborn & Fels, 2015; He, 2021), while travel and tourism is more likely using narrative, social network, and points (Seaborn & Fels, 2015; Sigala, 2015; Xi & Hamari, 2020; He, 2021).

Besides the context, the type users also define the type of gamification fit on them, as discussed by Robson et al. (2016). There are for type of users, i.e. slayers, strivers, socialites, and scholars. Based on the level of competitiveness, slayers and strivers are more competitive than socialites and scholars, so that leaderboards, badges, points, and challenges are most appropriate to them. Based on the player orientation, slayers and socialites need more social interaction, and multiplayer orientation is the type of gamification fit to them.

1.3. State of the art

PLN Mobile is a kind of application facilitating customers to get integrated services from PT PLN, a state-owned electricity provider. PT PLN is the only electricity provider for individual customer in Indonesia. Other providers are available only for B2B. The special characteristic of the company and customers, that is all Indonesian residents, creates different phenomena and behavior from other commercial application like marketplace, travel and tour services, or other leisure services. A model of the relationship gamification and customer engagement developed in this study, that is different from other previously developed model, will enrich the discussion related gamification and customer engagement.

2. Method

This study start with identification of stakeholders needs, i.e. PT PLN (Persero), by interviewing some personnel in Digital Management Division and evaluating related performance data of PLN Mobile. The next step is reviewing the previous researches related to customer engagement and gamification. Altogether with the literature review, a benchmark on other application used in Indonesia is performed, to get more realistic information about the gamification elements predicted to successfully implemented in Indonesia. The literature review and the benchmark becomes the basis for the development of theoretical framework. The theoretical framework then is tested through customer survey and correlation analysis to get the final model fit to the needs of PLN Mobile.

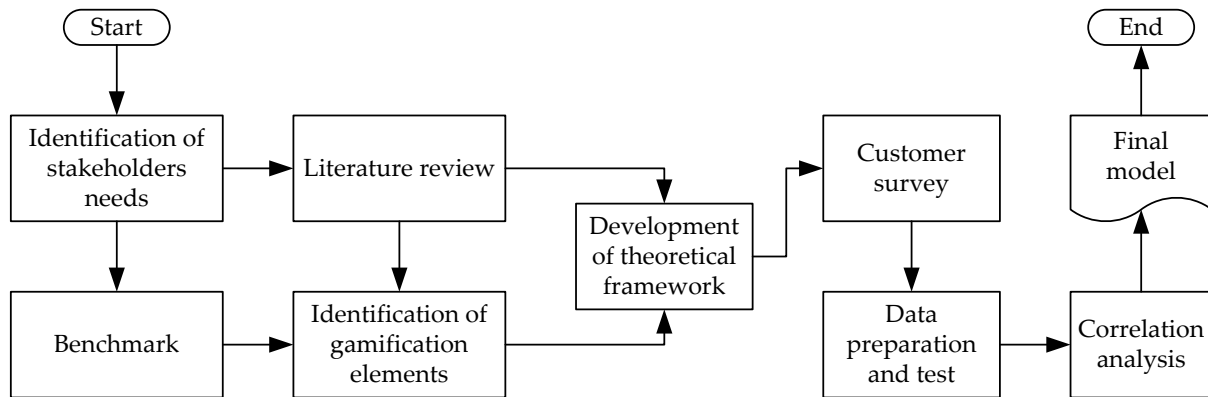


Figure 1. The research framework.

3. Results and discussion

3.1. Benchmarking

The literature review described above already resulting some attributes related to gamification. However, the cases from which the attributes taken are came from around the world. To get more specific information related to the characteristic of people in Indonesia, a benchmark on 15 applications used in Indonesia is performed. Table 1 shows the applications and the related gamification elements applied in the applications. Applications with big number of downloaders apply more varied gamification elements.

Table 1. Results of benchmark about gamification applied in applications.

No.	Application	Number of downloader (million)	Avatars/ characters	Badges	Coins	Points/scores	Leaderboard	Levels	Competition	Social network
Transportation and utility										
1.	Go-jek	100			√	√	√	√		
2.	Grab	100			√	√	√	√		
3.	Traveloka	50			√		√	√		
4.	Tiket.com	10			√		√	√		
5.	KAI Access	10			√					
Market Place										
6.	Tokopedia	100			√	√	√	√		
7.	Bukalapak	50			√	√	√	√		
8.	Shopee	100	√	√	√	√	√	√	√	√
9.	Blibli	10			√	√		√		
10.	Olx	10								
11.	Lazada	100			√	√	√	√		
12.	Akulaku	50			√	√		√		
Non-Market Place										
13.	Waze	100	√	√	√	√		√	√	√
14.	Telkomsel	100		√	√		√	√		
15.	MyValue	1			√			√		

3.2. Theoretical framework

Based on literature review and benchmark, a theoretical framework related to gamification and customer engagement can be developed as illustrated in Figure 2. Immersion (IMM), achievement (ACH), and social interaction (SOC) presents the character of gamification elements. Quests, tasks, challenges, avatars, narrative, and storytelling are examples of gamification elements included in IMM. The examples of ACH are points, levels, badges, leaderboards. Teams, messages, and social networks are the SOC examples. Reward program (RWD) and service quality (SVQ) are the attributes of the company as well as the products or services, that can be control by the company. The gamification characters and the company attributes are hypothesized to contribute to customer engagement (ENG). ENG is hypothesized to create customer loyalty (CUS). Meanwhile, RWD and SVQ might be also directly affect CUS.

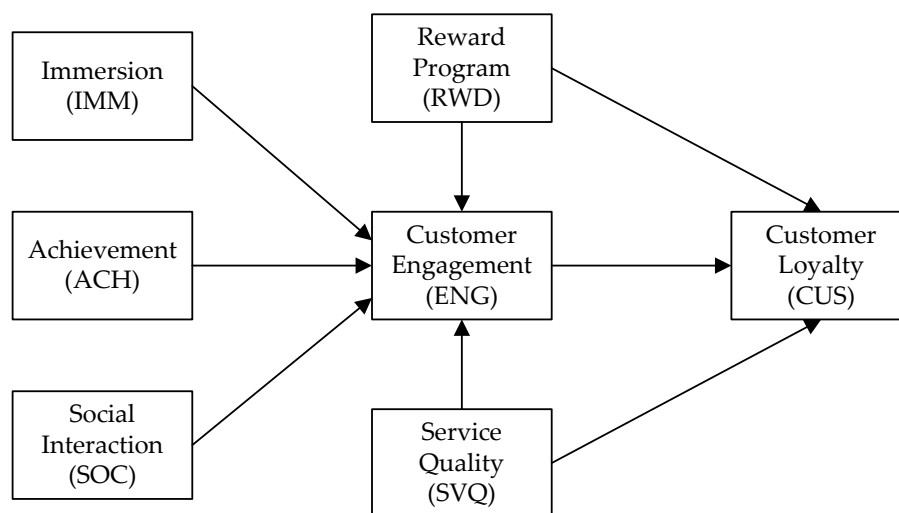


Figure 2. Theoretical framework of gamification and customer engagement relation.

3.3. Customer survey

The survey instrument is developed based on the theoretical framework illustrated in Figure 2, some part of survey instrument developed by Xi & Hamari (2020), and PLN Mobile requirements, resulting a questionnaire with 45 questions. After a pre-launch test, the questionnaire is distributed online to PLN customers using the phone data recorded in PLN system. The responses can be collected is 430. However, only 288 respondents already installed the PLN Mobile. Thus, for this study, the data analyzed is based on the 288 respondents. Based on the 288 observations, a reliability test is applied and the result shows that the Cronbach's Alpha coefficients of the variables are in the range of 7.45 to 7.94.

From the demographic profile, the PLN Mobile users are dominated by male (68%), mostly in the range of age from 25 to 54 years, mostly from Java Island, and mostly accessing PLN Mobile 1 to 5 times in a month.

3.4. Correlation analysis

To test the theoretical framework presented in Figure 2, a correlation analysis is carried out and the result is provided in Table 2. It can be summarized that all the variables are significantly correlated one to another. The gamification characters giving strongest

correlation with customer engagement are social interaction and achievement. Thus, gamification characters that is appropriate to PLN Mobile is the one that providing achievement opportunity and facilitating social interaction.

Table 2. The correlation analysis.

		IMM	ACH	SOC	ENG	SVQ	CUS
ACH	Pearson Correlation	.515**					
	Sig. (2-tailed)	.000					
	N	288					
SOC	Pearson Correlation	.452**	.653**				
	Sig. (2-tailed)	.000	.000				
	N	288	288				
ENG	Pearson Correlation	.375**	.465**	.467**			
	Sig. (2-tailed)	.000	.000	.000			
	N	288	288	288			
SVQ	Pearson Correlation	.366**	.420**	.451**	.710**		
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	288	288	288	288		
CUS	Pearson Correlation	.477**	.428**	.390**	.568**	.654**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	288	288	288	288	288	
RWD	Pearson Correlation	.338**	.391**	.401**	.547**	.526**	.484**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	288	288	288	288	288	288

** . Correlation is significant at the 0.01 level (2-tailed).

Even though gamification is proven to be significantly correlated to customer engagement, still that the variable with the strongest correlation with customer engagement is service quality, or the main function of the PLN Mobile. In other words, pushing gamification in PLN Mobile will not effective if the main function of PLN Mobile is still not accepted by the users.

Customer loyalty is proven to having high correlation with customer engagement. Thus the hypothesis that customer engagement creates customer loyalty is proven. As customer engagement, customer loyalty also highly correlated to service quality. The reward program has high correlation with customer engagement, but not so high with customer loyalty.

Considering the results of the correlation analysis, the final model of this study is illustrated in Figure 3.

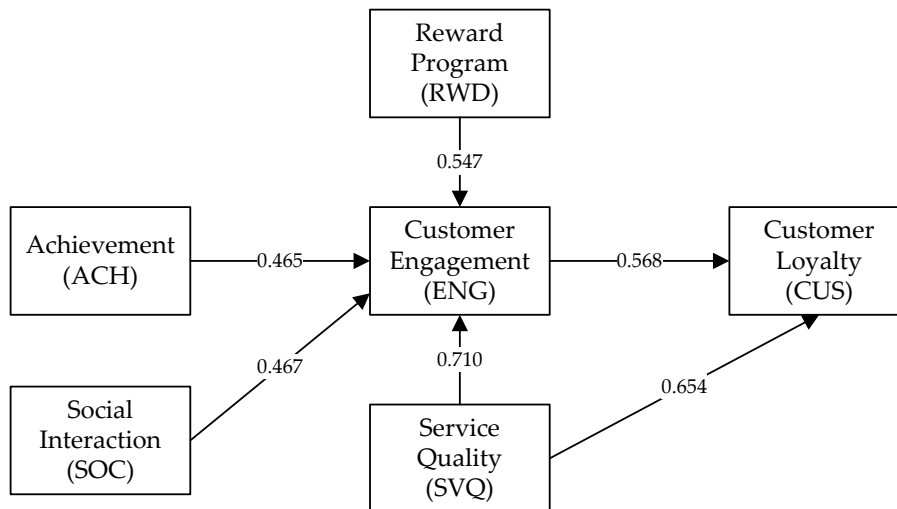


Figure 3. Model of gamification and customer engagement relation for PLN Mobile.

3.5. Respondents’ favorite games

The survey also quests about the favorite game of respondents. The result is presented in Figure 4. If the game defined as other is ignored, the most favorite games are sport, adventure, and strategy. The least favorite games are flight, casual, and children entertainment. This result confirms the conclusion of the correlation analysis that the fit gamification for PLN Mobile is the one that facilitates social interaction (adventure) and provide opportunity for achievement (sport and strategy). The gamification with the lowest correlation with customer engagement is the one that providing immersion experiences, that relevant with game of flight, casual, and children entertainment.

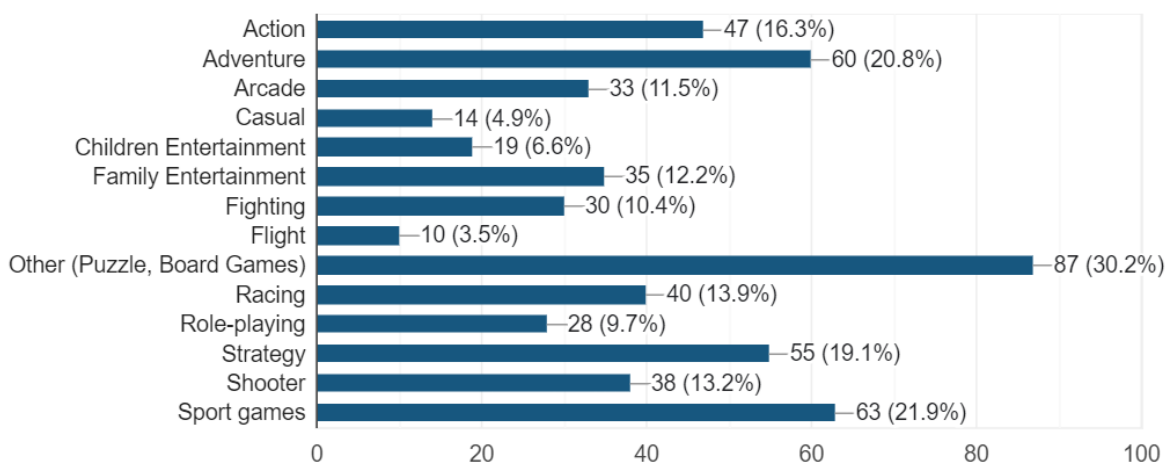


Figure 4. The favorite games of PLN Mobile users.

3.6. Managerial implication

The results of this study will help PT PLN (Persero) to improve the customer engagement in PLN Mobile by designing and implementing appropriate gamification programs. Further, the increase of customer engagement in PLN Mobile will (1) increase

service efficiency through digital process, and (2) increase the recorded valuable data of customer behavior and needs as the basis for PLN business analytics.

The results also show that beyond the effort for gamification process, PLN Mobile must enhance the service quality and amplify the reward program, to improve customer engagement. Gamification and reward programs will attract customers, on once they are attracted to and try PLN Mobile, the good service quality of PLN Mobile will make them stay to engage.

4. Conclusion

The relationship between gamification and customer engagement is already discussed widely in many researches through many cases. The study presented here discuss similar topic, but in different condition with other cases discussed in the previous researches. The special character of PT PLN (Persero) as the only electricity provider for Indonesian residents giving a struggling condition in attracting its customer to use PLN Mobile, a touted application for digitalization program in PT PLN (Persero), so that the result of this study can enrich the specific research area on gamification and customer engagement.

The results of this study is a finding that the gamification affects significantly to customer engagement of PLN Mobile, but, the highest influence to customer engagement is the service quality or the function of the PLN Mobile itself. The gamification can attract the customer only if the function of the PLN Mobile is also attractive.

The gamification suggested to apply in PLN Mobile is the one that facilitates social interaction and provide opportunity for achievement. The further research can be performed based on this research is prototyping process of gamification models for PLN Mobile and market test, to get more understanding about customer behavior. Practically, to push the users to access PLN at the first time, a reward program can be designed..

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