

MySSOF: Gamification Reward System for Enhancing Employee Participation and Activeness in Organizational Activities

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Abstract – This research introduces MySSOF, a gamification-based reward system that aims to increase employee participation and activeness in organizational activities. This system combines elements such as points, experience levels, activities, and leaderboards to encourage employee involvement. The evaluation was carried out using quantitative research by distributing questionnaires to 60 respondents according to the Slovin formula. It was concluded that in End-User Computing Satisfaction (EUCS), respondents perceived the content of the instrument with an average score of 4.18, the accuracy of the instrument with an average score of 4.28, the format of the instrument with an average score of 4.46, the ease of use of the instrument with an average score of 4.46, and punctuality. Instrument with an average score of 4.72, so the overall average score is above 4, which indicates a high level of respondent satisfaction with the MySSOF system in the very satisfied category.

Keywords – Employee engagement, workplace gamification, gamification, end-user computing satisfaction (EUCS), reward system.

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1. Introduction

In today's fast-paced business environment, companies must continuously excel and compete to achieve success. To become a superior and competitive company, various structured programs are necessary to improve employee performance [1]. Effective human resource management plays a crucial role in achieving organizational objectives as it directly impacts employee performance. To remain competitive and excel in today's fast-growing business environment, companies need to implement structured programs aimed at enhancing their human resource capabilities [2]. Effective management of human resources is crucial for companies to improve their performance and productivity. The management of human resources plays a pivotal role in achieving organizational objectives [3]. As the main driving force in a company, the employees themselves play a crucial role in determining its success. Therefore, it is essential for companies to pay attention to the workload and work-life balance of their employees, in order to ensure that they can maintain their performance and productivity [4].

Shared Service Operation Finance (SSOF) Division of PT. Telkom Indonesia has nuanced game activities outside of daily work activities by providing challenges to employees who work in Shared Service Operation Finance, such as *SSOF BERGERAK*, where there are activities that make employees do sports activities such as running, cycling, mountain climbing, and walk. Every month there are only three winners with the most calories. There is an activity using the platform to become a football manager, namely the Fantasy Premier League, where every week and month, the winner with the highest points is chosen. However, prizes are only given to winners in each category. At the same time, participants who participate in it do not get an award or prize as a participant.

A considerable number of employees in the SSOF Division seem to lack enthusiasm in participating in various activities, including SSOF Mobile and webinars organized by the division, which feature experts in their respective fields. These webinars cover not only personal development but also work-related skills. Despite the benefits of such activities, only around half of the 333 employees who work in the SSOF Division usually attend.

In the course of activities in the Shared Service Operation Finance (SSOF) Division, every employee is not recorded as a whole has participated in any activities that allow employees to get awards for making.

The review of previous studies is an essential part of any research as it helps to establish the context and relevance of the research question.

Several studies have been conducted on the topic of employee participation in activities and the use of gamification as a motivational tool. A study by Deterding [5] discussed the potential benefits of gamification in non-game contexts, such as work and education. The study found that gamification could lead to increased engagement, motivation, and enjoyment in non-game contexts.

Another study by Seaborn and Fels [6] examined the effectiveness of gamification in enhancing employee engagement and productivity. The study found that gamification could positively impact employee engagement and work performance, especially when the game mechanics were designed to align with work-related goals.

In the context of employee recognition and rewards, a study by Grawitch [7] explored the impact of different reward systems on employee engagement and satisfaction. The study found that a personalized, non-monetary reward system could lead to increased engagement and satisfaction compared to a traditional monetary reward system.

Moreover, in the context of employee participation in training and development activities, a study by Alliger [8] examined the factors that influence employee participation in training programs. The study found that employee motivation, job relevance, and supervisor support were essential factors in determining employee participation in training and development activities.

Overall, previous studies have shown the potential benefits of gamification and personalized reward systems in enhancing employee engagement and motivation. These findings provide valuable insights for the current research in designing a gamification-based system for recording and rewarding employee participation in activities at the SSOF Division.

The findings of prior studies demonstrate the extensive use of gamification in various domains, including education and marketing, which indicates

its potential for implementation in other areas such as employee assessment and human resources. Based on these prior studies, recommendations have been made to expand the current research by including previously unexplored factors.

2. Methodology

The stages of research carried out in this study started from identifying problems with observations and interviews, then conducting a literature study, conducting system design, system testing, designing validation using Slovin and Likert scale with End-User Computing Satisfaction (EUCS) framework, testing validation and reliability using Person Product Moment and Cronbach's Alpha to the distributed questionnaires, analysis of the results of the EUCS framework, and finally concluding.

2.1. Gamification

The term "Gamification" is derived from the English words "*game*" and "*ification*", which means to make or cause something to be like a game [9]. This concept involves the incorporation of game elements, such as rules, designs, and mechanics, into non-game contexts such as marketing or learning activities, to enhance user engagement and motivation. Gamification aims to make non-game activities more enjoyable and attractive to users by introducing elements of competition, rewards, and achievement that are commonly found in games [10]. Gamification has the potential to motivate users to engage in activities through continuous engagement by utilizing human psychological tendencies associated with gameplay and entertainment needs [11]. Some game elements, according to [12] used in this method, include:

a. Point

In gaming, the concept of "experience points" or XP is commonly used. XP is earned by players when they complete specific tasks or activities. This same concept can be applied in a work setting where employees can earn points for completing certain tasks or activities [12]. In an employee gamification system, users can earn points upon completing tasks or activities, which can be utilized to elevate their titles or badges. The incorporation of points in this reward system is intended to enhance user motivation. Furthermore, the gamification approach's points system creates interest among users regarding new tasks or activities that they can acquire and receive prizes upon meeting predetermined point thresholds.

b. Level

The gamification approach incorporates a hierarchical system. In gaming, levels are commonly utilized to denote stages or degrees of difficulty [12]. In the gamification method, a level system is implemented where the higher the level, the greater the level of difficulty that needs to be overcome. For instance, a reward system can be structured with this concept, where certain levels need to be attained to exchange for certain rewards[12]. In an employee gamification system, the level concept is applied, which is commonly used in games to indicate the level of difficulty. To progress to a higher level, users must accumulate a certain number of XP, with higher levels offering greater rewards or awards. If a user is at level 1 and wishes to progress to level 2, they must first accumulate 100 XP. Similar to the point system, the level concept encourages users to engage in daily activities and provides an added challenge to increase their level.

c. Badges

Digital badges, also known as badges, are components that enhance the appeal of gamification. Badges are acquired by employees when they achieve a specific level [12]. In the gamification method, badges usually take the form of trophies, ribbons, or other symbols that represent the organization providing the gamification system. For instance, users may receive a bronze badge upon reaching level 3, while a gold badge can only be earned after reaching level 15. The incorporation of badges in this gamification approach aims to boost employee motivation while at work. Badges also serve as a source of pride that signifies an employee's accomplishment in reaching a higher level.

d. Leaderboard

The final element in the gamification method is the leaderboard. In gaming, the leaderboard is a list that displays the names of players in order of their level or achievements through various challenges [12]. Similar to games, the leaderboard is an essential element of the gamification method, which can increase employee motivation. For instance, online learning platforms often use leaderboards to evaluate or rank users. Similarly, in this system, the leaderboard displays individuals who have earned the highest points and levels to inspire lower-ranking users to earn more points.

2.2. System Analysis Running

In the previous system, every activity made by SSOF Telkom opened registration for Organic Telkom Group employees, and SSOF Partners for employees who do not register usually do not follow the development of this activity. In contrast, registered employees always ask the committee for weekly activity information. After registering to participate in activities, the game's rules are always given, which will get prizes when getting first to third position. Each gift can be in the form of "LinkAja" or vouchers that can be spent at supermarkets.

The problem with the old system is that employees who have participated in activities will not get an appreciation for participating in activities until the employee can win one of the activities. This makes employees not appreciate the activities that have been followed because there are no records to provide information to all employees regarding what information has been done.

In addition, committee members often do not receive recognition and their contributions may not be widely known among other employees, which may result in their lack of visibility and recognition by senior managers in other departments. This information is useful when an assessment is held, especially for Telkom Group organic employees (permanent employees) in preparation for promotion candidates. If there is a system that records this, employees who participate in activities and those who become committee members will receive more awards than material. For employees of SSOF partners, it will be a reason to give more awards as Operational Partners. All of these activities do not have a system that is implemented on technology, whether it is web-based or application-based. The previous system can be described in Figure 1.

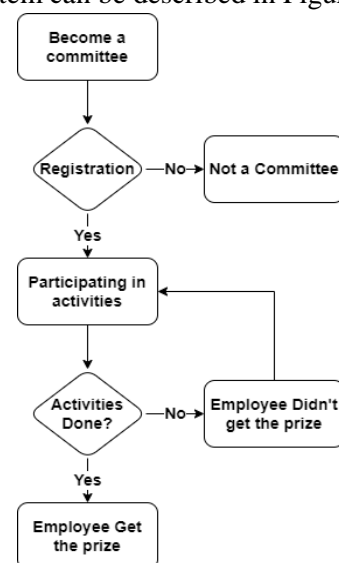


Figure 1. System existing

2.3. Proposed System analysis

After seeing the problems or constraints in the system running at SSOF, it is necessary to analyze the system's requirements to find out what needs are needed in the reward system for employees:

- a. In the process of distributing prizes in activities at SSOF, they are only given at the time of the activity, and there is no record containing other participants who take part in the activity as a sign that the employee has participated in many activities even though he did not receive a prize.
- b. Participants who take part in activities even though they do not win prizes must still be given appreciation because the activity of giving appreciation to participants who did not win an activity did not exist before.
- c. Requires a system that can see which employees are active in participating in activities at SSOF.

Implementation of the system using a website so that all employees can access it in SSOF, overview of the proposed system is shown in Figure 2.

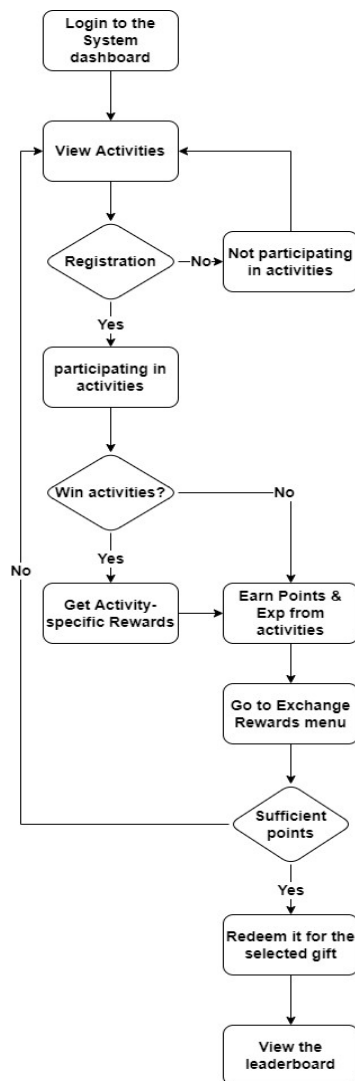


Figure 2. Proposed system

2.4. System Development

The utilization of the agile software development method in system design is aimed at expediting and streamlining the development process. The proposed software development phase led to the development of an approach that facilitates rapid software development, namely the agile software development approach. Compared to structured design methods, the agile software development approach has a higher success rate in project development. It is a software development methodology that employs an iterative process, with the team working collaboratively and in an organized and structured manner to implement agreed-upon rules and solutions[13].

The following is an explanation of the agile software development stages used:

A. Needs Analysis

Analyzing system requirements involves observing the system in operation and subsequently developing the proposed system. This process yields the results necessary to establish the system's workflow.

B. Sprint

The sprint stage is a stage that is repeated. In this case, the software development sprints three times in the proposed system development stage. Here are the steps that are repeated in the sprint.

1) System Design

In this stage, we are designing systems starting from UML, to design a system schema with storage, the process typically includes various diagrams such as use case diagrams, activity diagrams, and sequence diagrams[14]. Additionally, the logical data model is employed in order to construct a database. Until the last stage, the tools and materials needed in software development will be made.

2) Coding

Based on the system design that has been created, the coding process begins by developing a dashboard as the initial step. The dashboard serves as a visual representation of the system that provides an overview of the system's performance and functionality. It also allows users to interact with the system and perform various tasks efficiently. The dashboard design should be user-friendly and intuitive to ensure that users can easily navigate and utilize the system's features. Additionally, the dashboard should provide real-time updates and relevant information to users, ensuring that they can make informed decisions based on the system's data.

3) Testing

To ensure that the system functions as intended, the testing phase employs the use of Blackbox testing. This is carried out to verify that the system operates in line with the pre-determined design and coding specifications.

4) Release

The system can be used by users who want to be admins in the employee reward system.

C. Evaluation

After the release, it is necessary to evaluate as a whole whether it can be used properly following the needs in the first stage. If the system is still not suitable, then it is necessary to return to the sprint stage so that the system is in accordance.

D. Maintenance

This stage involves continuous monitoring of the system after it has been widely implemented among employees. This includes monitoring its performance, detecting system failures, identifying potential security threats and attacks, and other related issues.

E. Final Product

After monitoring with many users, the system can be used as a final product that is in accordance with what is needed. Thus, the system will get additional features outside of the initial design.

2.5. Reward System

The concept of a system refers to a group of objects that are connected and work together to achieve a common objective. The objects within the system are interrelated and interact with one another as a cohesive unit, and their interdependence enables the system to function effectively. In essence, a system is a collection of variables or elements that are arranged and structured in a way that enables them to collaborate and rely on one another [15].

Authentic appreciation is an act of expressing admiration or gratitude towards someone. It is important to note that demonstrating genuine appreciation can be tailored to individual preferences, as not everyone responds to appreciation in the same way. When appreciation is conveyed in a manner that is meaningful to the recipient, several favorable results can arise, such as strengthened relationships with peers and superiors, decreased absenteeism, heightened employee involvement, and augmented customer satisfaction levels [16].

The reward system is a mutually dependent set of functions that work together to provide incentives. In this context, the report is a system that offers rewards to employees through its various functions. The adoption of a reward system is driven by the fact that individuals who frequently participate in mobile SSOF activities do not receive any recognition or

rewards for their consistent engagement, despite their sustained involvement over time. When appreciation is expressed in a manner that aligns with the recipient's preferences, it leads to several positive outcomes, including enhanced relationships with colleagues and supervisors, reduced absenteeism, higher levels of employee engagement, and improved customer satisfaction ratings [16].

2.6. System Testing

This passage provides an overview of the steps involved in testing an application that has been developed. Testing is a component of verification that ensures that the software correctly implements a specific function. Validation is then performed to ensure that the software can be traced back to the requirements requested by the customer. Information system testing is a critical element of quality assurance for information systems and represents the specification, design, and coding [17].

a. Whitebox Testing

Whitebox testing involves verifying the detailed design and procedural control structure of a program to divide testing into multiple test cases of the application. This testing method is based on examining the intricacies of the system's design and is critical in the quality assurance of information systems as it ensures that the software functions accurately and meets customer requirements [17].

b. Blackbox Testing

Blackbox testing is an approach used to test the operational functions of software. This approach is typically performed by testers who are not involved in the software coding process. The types of errors that can be identified through Blackbox testing include: (a) functions that do not work as planned or are missing, (b) errors in the user interface display, (c) errors in the external data structure or database access, and (d) errors in the performance of the system being developed [18].

c. System Testing Methodologies Use

The following is a description of the differences between white box and black box testing. White box testing involves testing based on checking the design details, using the control structure of the procedural program design to divide the testing into several test cases of the application. Black box testing, on the other hand, tests the operational functions of software [19]. This approach is usually carried out by testers who are not involved in software coding.

Errors that can be identified through black box testing include: functions that do not run as planned or disappear, interface display errors, external data structure and database access errors, and system performance errors.

White box testing instructions include being carried out by testers who have knowledge of QA. Testing is conducted on the application program regarding application security and performance, including code tests, implementation design, security, data flow, or software failure. This testing is done simultaneously with software development or during the testing phase. On the other hand, black box testing is conducted by independent testers who test based on what they see, focusing only on functionality and output. Testing is more directed towards software design according to standards and reactions, in case there are bug/vulnerability gaps in the application program after testing. This testing is carried out after white box testing.

After considering the factors in the field, it is better to use black box testing because there is no expert available to test the system that has been developed. White box testing requires a quality assurance professional who understands the technical aspects of system development.

2.7. Questionnaire Design

The main purpose of this questionnaire is to help extract data from interviews with respondents as a standard guide for interviewing employees regarding the system created.

Without this standard, the answers of each respondent will vary according to the individual. The questionnaire also serves as an instrument in testing the system with End User Computing Satisfaction (EUCS).

The questionnaire design is an essential step in the research process as it ensures the accuracy and reliability of the data collected. The questions should be structured in a logical and clear manner to avoid confusion or misunderstanding among respondents. It is also important to consider the target audience and the purpose of the study to ensure that the questions are relevant and appropriate.

Moreover, the questionnaire design should undergo pretesting to identify any issues or problems with the questions. This process involves administering the questionnaire to a small group of individuals who are similar to the target population to check for any errors or inconsistencies in the questions. Feedback from the pretesting phase can be used to refine and improve the questionnaire before it is administered to the larger sample. Overall, the questionnaire design is a crucial aspect of the research process that contributes to the validity and reliability of the study findings, in Table 1, a questionnaire instrument is presented to test the validity of the proposed system.

Using a Likert Scale with the following format:

- a. Score 1. Strongly Disagree (SD)
- b. Score 2. Disagree (D)
- c. Score 3. Neutral(N)
- d. Score 4. Agree (A)
- e. Score 5. Strongly Agree (SA)

Table 1. Questionnaire instrument

Instrument	Question Item	Option				
		SD	D	N	A	SA
<i>content</i>	Does MySSOF provide accurate information on activities that you need?					
	Does MySSOF provide information on activities that meet the criteria for rewarding employees?					
	Does MySSOF provide relevant information about award-giving activities for employees participating in activities during its use?					
	Does MySSOF provide sufficient information for your daily activities?					
<i>accuracy</i>	Does MySSOF accurately reflect the activities in SSOF?					
	Can you confirm your satisfaction with the accuracy of the rewards provided by MySSOF?					
<i>format</i>	In your opinion, do you find MySSOF easy to use?					
	Does MySSOF provide clear instructions for use?					
	Is the flow of activities in MySSOF clearly understandable?					
<i>Ease of use</i>	Can MySSOF be considered as a user-friendly system for its users?					
<i>timeliness</i>	Do you find MySSOF easy to use across different devices that you use?					
	Do you always use MySSOF with quick menu responses?					
	Does the information provided in MySSOF always remain up-to-date?					

3. Results and Discussion

In this section, system design has been conducted starting from conceptual design to system design, and at the end, validation has been conducted on the proposed system using alpha testing with a black box and beta testing using quantitative research to measure the effectiveness.

3.1. System Result

The login screen in Figure 3, displays the MySSOF system logo with the required forms, namely username and password, and a check column is given to save cookies so that the browser keeps login information longer, and a registration form is given for users who have not registered.

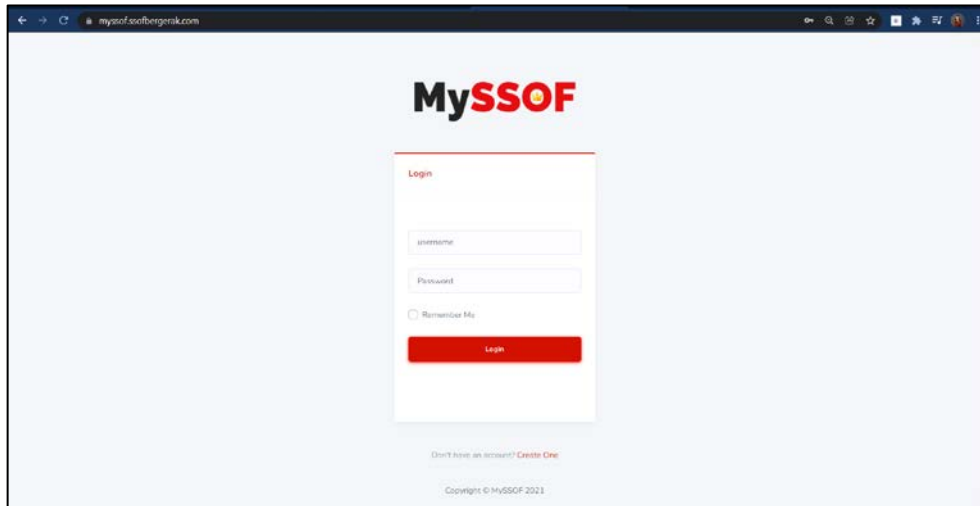


Figure 3. Login view

The display after logging in will immediately show some management in use cases such as events (activities), leaderboard, users, and rewards.

In Figure 4, the dashboard display adjusts to the format to make it easier for the admin to choose the menu.

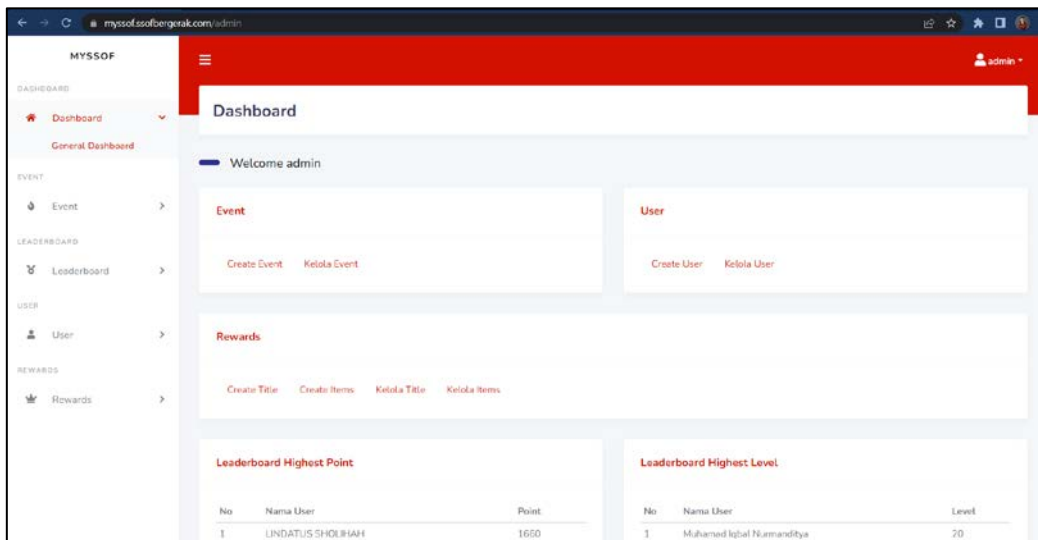


Figure 4. Dashboard view

From the user profile view in Figure 5, it can be seen how many activities are followed and how many points and rewards have been exchanged.

The king's avatar here is used as a badge because the user has reached that level.

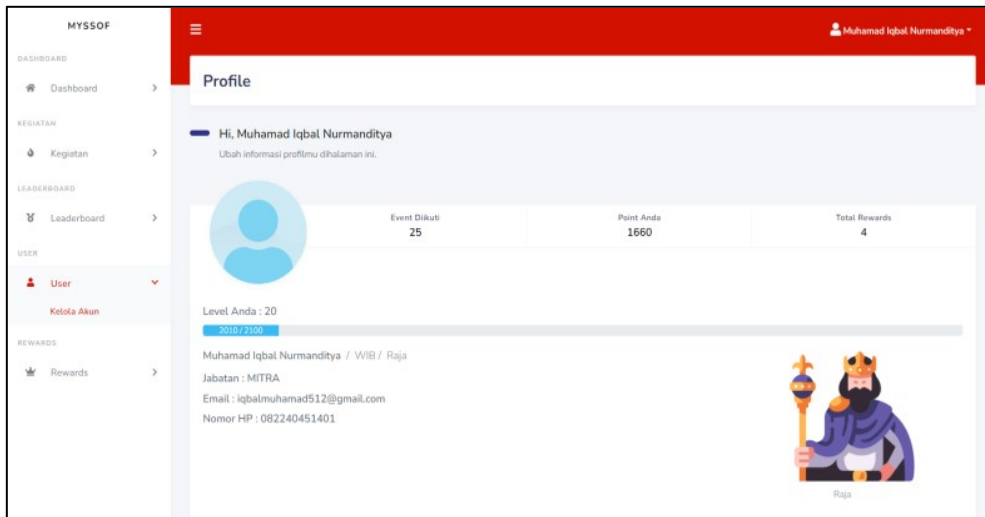


Figure 5. User profile view

The rewards exchange display in Figure 6, has a list of existing prizes and a description of how many points are needed so that users can exchange them when the points are sufficient.

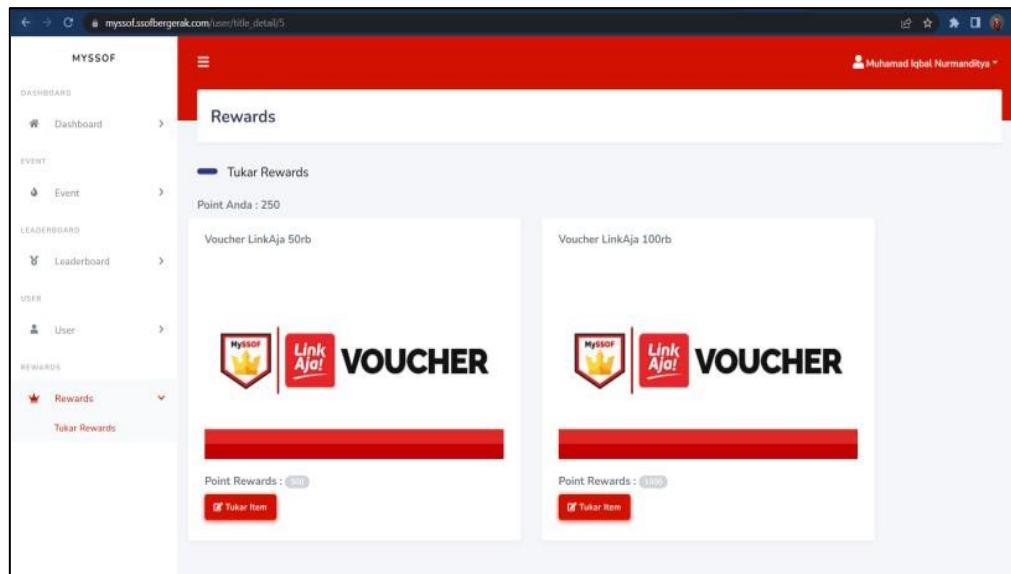


Figure 6. Exchange rewards

3.2. Validity and Reliability Test

After creating the questionnaire, the subsequent phase involves verifying the questionnaire's acceptability. This is accomplished by utilizing the Slovin formula to determine the number of samples required from the 150 registered users. The Slovin formula is expressed as: N

$$n = \frac{N}{1 + N(e^2)}$$

$$n = \frac{150}{1 + 150(0,1^2)}$$

$$n = 60 \quad (1)$$

So the sample we need is 60 respondents as a validation of the questionnaire that has been made so that the questionnaire can be used by End User Computing Satisfaction (EUCS).

Once the sample size is determined, the subsequent step involves administering the questionnaire to the participants, followed by processing the collected data using Pearson product-moment correlation coefficient to establish the validity of the questionnaire tool.

Table 2. Pearson correlation result

Correlations	
	Total
item_01	.745**
item_02	.593**
item_03	.532**
item_04	.520**
item_05	.643**
item_06	.454**
item_07	.621**
item_08	.734**
item_09	.721**
item_10	.648**
item_11	.586**
item_12	.654**
item_13	.669**
Sig. (2-tailed)	0,000
N	150

It can be concluded by looking at the Table 2 that the Cronbach's Alpha value from the respondents' results is worth 0.857, where r table is worth r table. Significance 5% and 1%, 5% with a value of 0.159 or 1% with a value of 0.210 with a reliability level of more than 0.8 then the questionnaire stated to be reliable and very reliable so that it can be trusted for further research.

The following Table 3 presents the results of SPSS processing using the Cronbach's Alpha method per item so that it can be seen.

Table 3. The outcome of Cronbach's Alpha

Reliability Statistics	
Cronbach's Alpha	N of Items
.876	13

In Table 4, the user satisfaction level scale is divided into five levels, namely: (1) with a score of 0-15 given a description of the level of satisfaction-very dissatisfied, (2) with a score of 1.5-2.5 given a description of the level of satisfaction- dissatisfied satisfaction, (3) with a score of 2.5-3.0 given a description of the level of satisfaction neutral, (4) with a score of 3.0-4.0 given a description of the level of satisfaction satisfied, and (5) with a score of 4.0-5.0 given a description of the level of satisfaction-very satisfied.

Table 4. User Satisfaction level scale

Level	Score (0-5)	Satisfaction Level
1	0 -15	Very Dissatisfied
2	1.5 - 2.5	Dissatisfied
3	2.5 - 3.0	Neutral
4	3.0 - 4.0	Satisfied
5	4.0 - 5.0	Very Satisfied

The average value in Table 5 shows that each item has an average of above 4; therefore, it is included in the level 5 category, which is very satisfied, with respondents' perceptions of content instruments of 4.18, respondents' perceptions of accuracy instruments of 4.28, the instrument format is 4.46, and the ease-of-use instrument is 4.46, and the timeliness instrument is 4.72.

Table 5. Instrument average value

	C	A	F	EoU	T
Average	4,18	4,28	4,46	4,46	4,72

From the descriptive statistics result in Table 6, the smallest value of the questionnaire is three, and the largest is five with two. This indicates that the respondents gave a neutral value-very satisfied with the developed system with an average of each question instrument getting a value of 4 or if it is calculated on average the whole instrument about getting an average value of 4.38 which means that respondents are very satisfied with the system based on the average of each question instrument given.

Table 6. Descriptive statistics result

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
item_01	150	2 3	5	4.25	.704	
item_02	150	2 3	5	4.02	.585	
item_03	150	2 3	5	4.27	.601	
item_04	150	2 3	5	4.17	.572	
item_05	150	2 3	5	4.39	.673	
item_06	150	2 3	5	4.17	.455	
item_07	150	2 3	5	4.25	.657	
item_08	150	2 3	5	4.50	.515	
item_09	150	2 3	5	4.62	.501	
item_10	150	2 3	5	4.39	.601	
item_11	150	2 3	5	4.53	.564	
item_12	150	2 3	5	4.67	.514	
item_13	150	2 3	5	4.77	.440	
Valid (listwise)	N150					

4. Conclusion

The system runs according to the problem, namely how to apply the concept of gamification, consisting of several elements such as 1) points to be exchange rates in the system that can be exchanged for prizes, 2) experience points are important things that become the reference level for each employee, 3) activities for providing challenges to employees, 4) leaderboards to find out the rank of employee scores from the highest to the lowest for each activity, points to experience points. With the implementation of the reward system for employees using the gamification method, sense of participation and activeness of employees can be significantly increased. A recording system that employs a reward system for employees, utilizing gamification, can offer incentives to all participants, not just the winners of specific activities. This encourages continued participation, as every activity is recorded in a history log, allowing employees to track their participation and accumulated points. This transparency motivates employees to engage in a higher number of activities.

The implementation of a recording system using the gamification method for employee reward system can provide rewards to employees who do not win a certain activity, which can keep them actively participating in activities. All activities are recorded in the system to enable employees to track the number of activities they have participated in and the number of points they have collected.

Based on the results of the blackbox testing, the system runs smoothly without any errors, in accordance with the initial design and Analysis of End-User Computing Satisfaction (EUCS), Respondents perceived the content of the instrument with an average score of 4.18, the accuracy of the instrument with an average score of 4.28, the format of the instrument with an average score of 4.46, the ease of use of the instrument with an average score of 4.46, and punctuality. Instrument with a mean score of 4.72, thus the overall mean score is above the threshold, indicating a high level of satisfaction among the respondents. Each item in the questionnaire also received an average score above 4, which is included in the "very satisfied" category.

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