Journal of Information Systems and Informatics

Vol. 4, No. 3, September 2022 e-ISSN: **2656-4882** p-ISSN: **2656-5935**

http://journal-isi.org/index.php/isi Published By DRPM-UBD

The Use of Gamification for Pre-Recruitment System in Tax Consulting Company

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Abstract

The increasing need for employees who are experts in the IT field, or commonly referred to as digital talent, is a new challenge for the human resources department in the era of digital transformation. The results of interviews and observations conducted at a tax consulting company show that the HR department does not have a definite procedure for measuring the technical capabilities of IT candidates. Because technology is always changing and evolving, it is difficult to locate someone who is already conversant with the most current technologies and techniques. Assessing a candidate's genuine potential is more difficult than merely reading it on a CV or asking, "can you accomplish this?" or "do you have this trait?" Previous research indicates that the majority of candidates lie about themselves on their resumes and hiring managers just don't care. Having a qualified digital talent is critical while the tax company undergoes digital transformation. With Gen Z and millennials as recruitment targets, this study proposes a solution by designing a gamification using the MDE framework. Gamification has been shown to be effective in attracting and assessing fresh talent throughout the recruiting process. The purpose of this study is to investigate how gamification might attract skilled IT applicants while avoiding errors in judging their genuine potential.

Keywords: Gamification, Recruitment, MDE, Design Thinking, Digital Talent

1. INTRODUCTION

Human resources are the most important resources for an organization [1]. The importance of human resources in the company makes the employee recruitment process the most important function in human resource management [2]. This is because the technological advantage of an organization can only be achieved by hiring talented people [1]. Employee recruitment needs to be considered scientifically and objectively, by placing everyone in a position according to their qualifications and abilities[3].

In the era of digital transformation, the increasing need for IT-skilled employees is a new challenge for the human resources department [4]. The results of a survey

conducted by Robert Walters of nearly 400 technology professionals and hiring managers in Southeast Asian countries, states that the current difficulty level of recruiting digital talent averages a score of 7 on a scale of 1-10, with 10 being the hardest score [5]. As the demand for digital talent far exceeds the available supply, the HRM department plays an important role in supporting digital transformation by attracting the attention and interest of digital talents who are looking for new places to work [4]. Faced with this, recruiters need to look for a more diverse recruitment models to ensure that companies get the best and most honest candidates in the future[6].

This paper discusses a tax consulting company based in Jakarta, Indonesia which is also undergoing digital transformation from various aspects of the company. Starting from technology infrastructure, data, to employee competencies so that they can adapt to the times and continue to provide the best service. For the company, technological developments in the field of taxation, especially to respond to the digital economy, are a must [7]. Therefore, the company has opened many job vacancies to meet the resource needs of the newly formed Digital Transformation division in 2021. Apart from the large number of applications, company's difficulties are also due to the absence of a way to measure the technical capabilities of IT candidates. The recruiting process is solely based on CVs and interviews, where earlier study shown that 78% of job candidates lie about themselves and 66% of hiring managers don't care[8]. This can increase the risk of recruiting candidates who do not meet expectations which leads to a decline in company's performance.

Tabel 1. Comparison of the number of CVs and job openings

Whole Company		
Year	**CV Received**	**Job Opening**
2021	6886	30
2022 (until May)	1139	44

Digital Transformation Division		
Year	**CV Received**	**Job Opening**
2021	3137	21
2022 (until May)	643	20

Millennials and Gen Z, who are the object of the company recruitment in general have the characteristics of technology-minded, creative, and easily bored, so they need a special strategy in their approach [9]. Growing up with technology, young generations are very familiar with various kinds of games [9]. With that in mind, researcher wants to implement gamification in the existing recruitment system to assist recruiters to both attract and assess candidates.

Gamification is an approach that applies game elements to solve non-game problems. Gamification in the field of recruitment and job training has been practiced several times before [10]. Companies that use gamification are considered more innovative and professional and provide a new image that can increase the attractiveness of job applicants, especially young adults [11]–[13]. The innovative recruitment process is expected to attract job applicants who are no less creative and innovative [9].

The MDE Framework, pioneered by [14], is used by the researcher to construct this gamification. MDE Framework serves as a fundamental framework for game creation by breaking it down into three distinct components [15]. MDE (Mechanics-Dynamics-Emotions) is a modification of the MDA (Mechanics-Dynamics-Aesthetics) framework in which "Aesthetics" is replaced with "Emotions" because according to the researchers, "Aesthetics" is more relevant in the concept of games than in the concept of gamification which is actually not specifically a game [15]. "Aesthetics" is changed to "Emotions", because the term emotions are more relevant to the involvement of employees or customers in a business process [16]. From previous studies, researchers learned that the MDE framework is a form of further development of the MDA framework, where the aesthetic component is replaced with the emotions component so that it is more suitable for the concept of gamification.

Because the researcher's proposed gamification design is only used at the beginning of the recruiting process, it is referred to as pre-recruitment. The gamification will only be seen from the perspective of a certain IT position, which is Front-end Engineer. Based on the narration, the following research questions may be formulated:

- How to gamify company's pre-recruitment system?
- How do recruiters and candidates think about the new gamification design?

2. METHODS

The researcher will gather data and information through qualitative research. Data is gathered by conducting interviews with all Front-end Engineers in the company. The results of the interviews will be used to construct player personas. A player persona is a vital document necessary to develop the gamification specification and criteria so that the gamification is appropriate for its user. Once the gamification has been designed, the researcher will review and assess it with all Front-end Engineers using the Think-Aloud evaluation approach.

2.1. Data Collection Method

The researcher gathered two sorts of data: primary data and secondary data. Primary data were gathered through interviews, Forum Group Discussions, and

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direct observation. While secondary data was acquired from research sources and earlier papers. Respondents included two Product Owners, one UI/UX Designer, the Head of Product, two HR personnel, and all five Front-end Engineers.

2.2. Design Method

The MDE Framework serves as the foundation for game creation by breaking it down into three distinct components: Mechanics, Dynamics and Emotions.

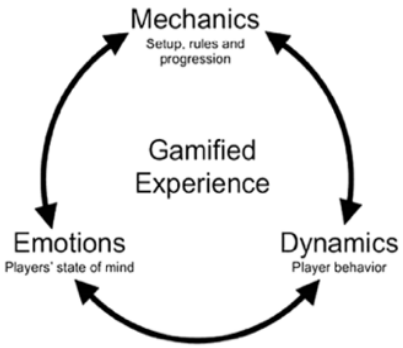

Figure 1. MDE Framework [16]

1) Mechanics: are decisions made by game designers or those who develop gamification to set the goals, rules, types of interactions, and scenario limits in games that will be played by players. It is the core of the gaming experience that control how players engage, how to win/lose, and when and where the gaming experience is perceived.
2) Dynamics: is a type of player behavior that occurs when a player takes part in a gaming experience. In contrast to the mechanics that is set by the game designer, dynamics are generated by how gamers follow the mechanics chosen by the game designer.
3) Emotions: Emotions in gamification are the mental affective states and emotions elicited in individual players during the gamification experience.

2.3. Method for Developing Solution

The method that researchers use in developing gamification is the Design Thinking method. Combining the MDE framework with the Design Thinking design process is a type of originality in researchers' gamification study. Design Thinking is a five-step analytical and creative approach that begins with empathy and ends with testing.

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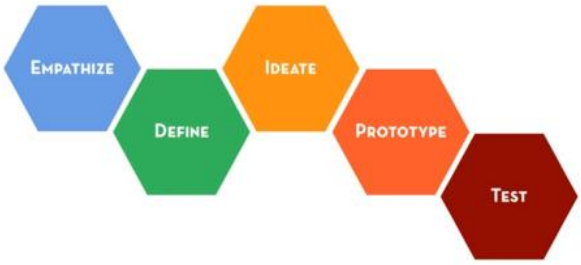

Figure 2. Design Thinking Process [17]

1) Empathize: At this step, the researcher attempts to empathize to better understand gamification players. This is accomplished by hosting a User Interview session. The findings of data collected in user interviews assist researchers in understanding who would use the gamification design so that design researchers are built on genuine insights.
2) Define: Researchers will analyze the data gathered during the Empathize stage to determine/define the relevant gamification criteria. The researcher uses the Mechanic-Dynamic-Emotion framework to define the needs.
3) Ideate: The researcher utilizes the player persona document and a set of gamification criteria to develop the final system/User Interface design.
4) Prototype: Previous researchers' User Interface design was initially static. The researcher will now transform the static gamification concept into an interactive prototype that can be replicated. The researchers used Figma software to build a gamification prototype.
5) Test: At this point, the researcher attempts to gather input through an assessment session, which will be utilized to enhance the following version. Because of the short number of resource personnel, the assessment was conducted using a qualitative technique, using Think Aloud Evaluation approach.

3. RESULTS AND DISCUSSION

According to the previous explanation, the gamification designed in this study was created only for the role of Front-end Engineers. This study began with user interviews with all of the Front-end Engineers in the organization to represent potential Front-end Engineers candidates who will be hired by the firm in the future. The data acquired from the interviews will be utilized to create a player persona that represents the primary target of the gamification that the researcher want to create.

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Interview questions have a ranged of categories, which are General, Demography, Personality, Job applicant experience, Gaming experience and Technology proficiency.

According to the interview results, respondents may be divided into two types of players: *Achiever* type and *Killer* type. The researcher generated two player personas for each player type, which were presented in a visual framework, as seen in Figures 3.

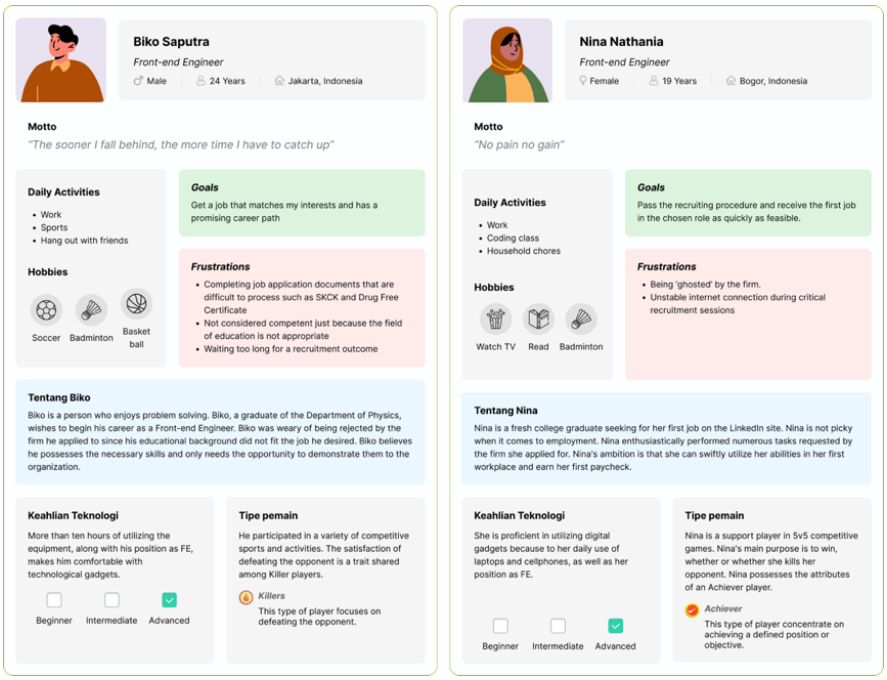

Figure 3. Player Personas

Killers' motivation is to score the most points and defeat other players. While *Achievers'* objective is to beat the game and accomplish all levels. The researcher evaluates the information provided in the personas to select the appropriate mechanism and build the final User Interface based on the user's preferences. After obtaining the player persona, the researcher will establish the gamification needs based on the MDE Framework components, namely Mechanics, Dynamics, and Emotions.

3.1 Mechanics

Based on the results of the analysis of player persona characteristics and supported by data from previous studies, candidates who apply for jobs as Front-end Engineers in

the company are categorized as *Achievers* and *Killers*. The following are selected gamification mechanisms to support the Achiever and Killer type user experience:

1) *Points*: The use of points is crucial to gamification. It serves as a reward for user accomplishments or admirable actions. The player will level up if they successfully solve a task. As the tasks grow increasingly tough, the quantity of points gained in each level increases.

Tabel 2. Points

Points Received	Description
+50 points	Earned by finishing levels 1–5
+100 points	Earned by finishing levels 6
+120 points	Earned by finishing levels 7
+140 points	Earned by finishing levels 8
+160 points	Earned by finishing levels 9
+180 points	Earned by finishing levels 10
+50 points	Bonus points for answering fast
-5 points	Responding incorrectly on level 1–5 questions
-20 points	Responding incorrectly on level 6-10 questions

2) *Level*: The gamification session's levels serve as milestones. The levels in the game may be used by users to see how far they have advanced. The user has the option of finishing all 10 levels. Depending on how challenging a level is, each has a varied point weight.

Tabel 3. Levels

Level	Question Type	Difficulty Level
1	Multiple Choice	Easy
2	Multiple Choice	Easy
3	Multiple Choice	Moderate
4	Multiple Choice	Hard
5	Multiple Choice	Hard
6	Coding Challenge	Easy
7	Coding Challenge	Easy
8	Coding Challenge	Moderate
9	Coding Challenge	Hard
10	Coding Challenge	Hard

3) *Badge*: Users' successfully accumulated points can be divided into three badge tiers. The division of the badges into three tiers is based on the three levels of front-end engineering employment that are accessible inside the business: junior, middle, and senior.

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Tabel 4. Badges

Badge	Points	Badge Type	Description
	0-400 points	Bronze	Junior level engineer
	401-800 points	Silver	Middle level engineer
	801-1200 points	Gold	Senior level engineer

4) *Challenge:* The user must fulfill challenges in order to advance to the next stage or level. This gamification concept presents a challenge in the form of essay questions and multiple-choice questions pertaining to programming languages. To be successful, the user must finish the challenge within the allotted time.

Utilizing a timer will help the researcher pressure and limit the user of gamification. It is anticipated that the active timer would prevent players from cheating by dictating the pace of the game and soliciting assistance from seniors or peers. For all the questions, 90 minutes are allotted for completion.

Tabel 5. Time Limit

Level	Question Type	Timer
1	Multiple Choice	15 minutes
2	Multiple Choice	
3	Multiple Choice	
4	Multiple Choice	
5	Multiple Choice	
6	Coding Challenge	10 minutes
7	Coding Challenge	10 minutes
8	Coding Challenge	15 minutes
9	Coding Challenge	20 minutes
10	Coding Challenge	20 minutes

The gameplay set by the researcher is as follows:

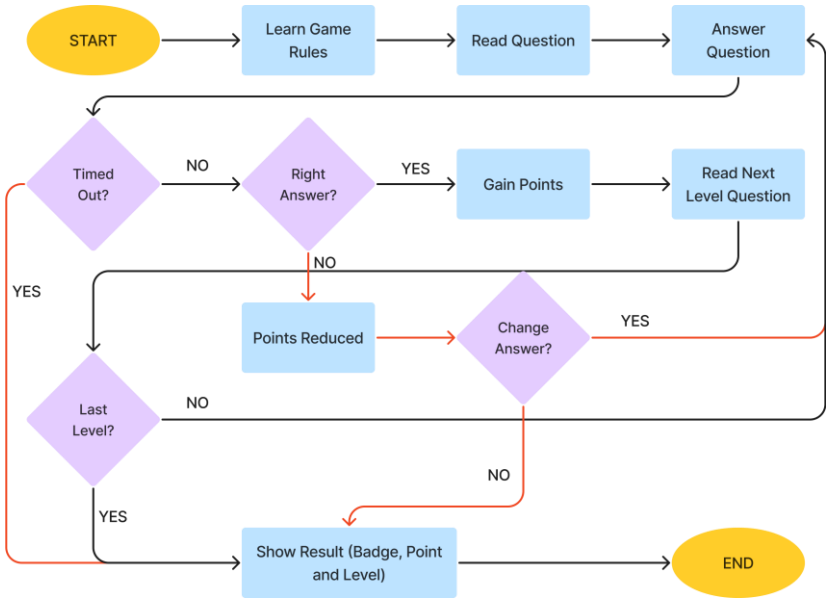

Figure 4. Gameplay

3.2 Dynamics

Based on the matrix framework pioneered by [18] and the relationship between mechanics, dynamics and player types defined by [19]. The dynamics that are expected to appear in this gamification design are as described in Table 6.

Tabel 6. Dynamics Based on Chosen Mechanics

Human Desires	Game Mechanics			
	Badge	**Level**	**Points**	**Challenges**
Reward	✓		✓	
Status		✓		
Competition			✓	
Progression		✓		
Achievement				✓

1) *Reward:* One of our basic human goals is to be rewarded for good deeds. In the gamification session that the researcher created, the researcher rewards users with points and badges as a way of showing their appreciation.
2) *Status:* Due to their social nature, humans have a desire to be respected, which may be satisfied through position, recognition, and attention. The

level component motivates the player to keep going up levels in order to get a more respectable "status".

3) *Competition:* The points system is set up so users may compete to prove they are superior to other applicants for their position. Users are anticipated to become the candidate with the most points due to the competitive nature of the system.
4) *Progression:* The user is given a broad overview of the trip to be taken and how far the progress has come by indicating the entire number of levels that are accessible as well as the levels they now possess. The level serves to motivate the user to keep moving forward until the final challenge in addition to serving as the status that they are seeking.
5) *Achievement:* It is envisaged that users would feel more accomplished and confident in tackling the subsequent difficulties by successfully completing the numerous challenges provided by the system

3.3 Emotions

The user's simulation has the potential to alter the user's feelings and relationship to the hiring process. High emotional engagement can lead users to experience feelings like happiness or excitement during the decision-making process from a positive perspective or disappointment from a negative one if they are unable to finish all tasks.

3.4 Results of the Designed Gamification

The company's hiring website has undergone significant adjustments with the addition of the gamification components that have already been described. The user interface design that has altered as a result of gamification is seen below.

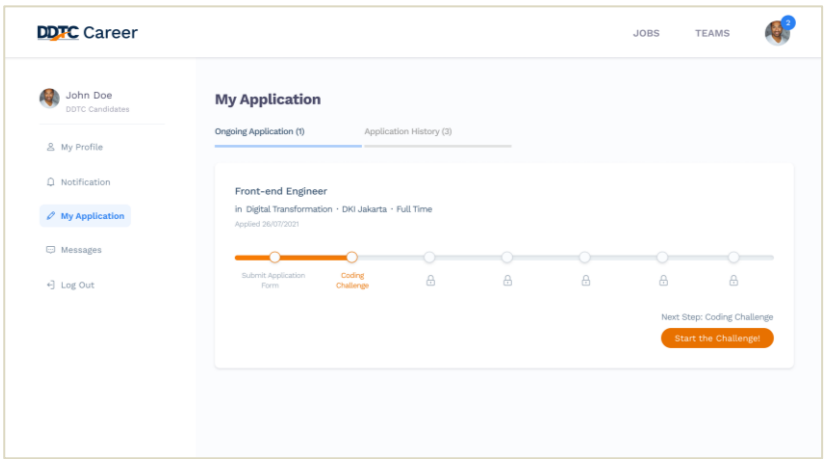

Figure 5. Starting Gamification Session

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The user must fulfill several challenges in the form of programming languages as seen in Figure 6. The complexity of the first task is moderate and will rise in future difficulties.

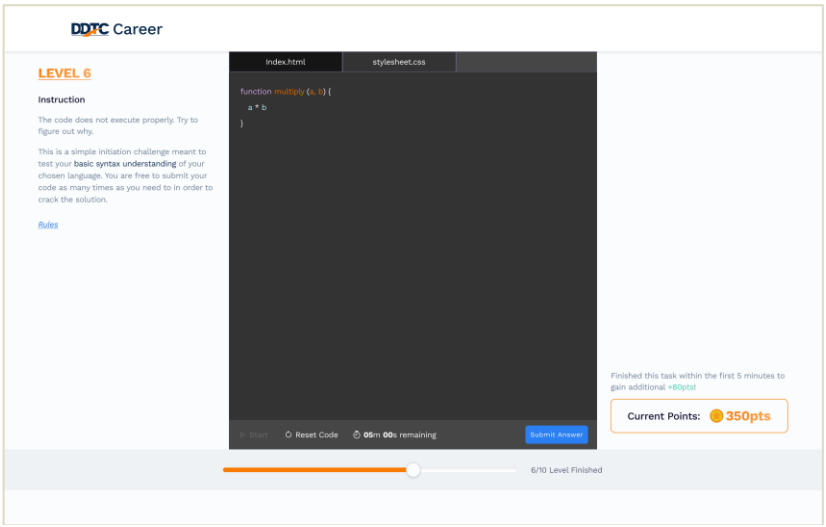

Figure 6. Coding Challenge

In Figure 7, a Level Up pop-up that displays the user's point total from the task he just finished will appear when the system determines the response to be accurate.

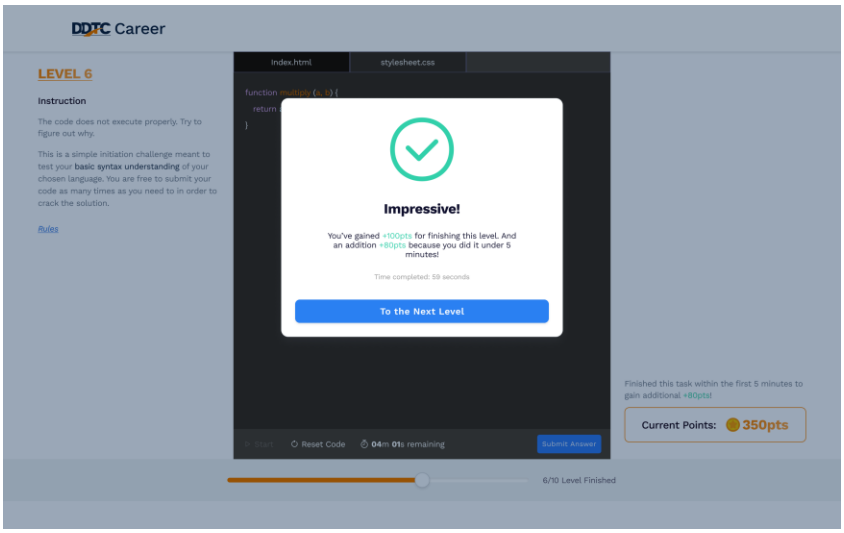

Figure 7. Gaining Points

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The system will show the user's completed levels, badge, and point total after the gamification session is over. Depending on each user's individual progression to the next stage, the results will vary from one another.

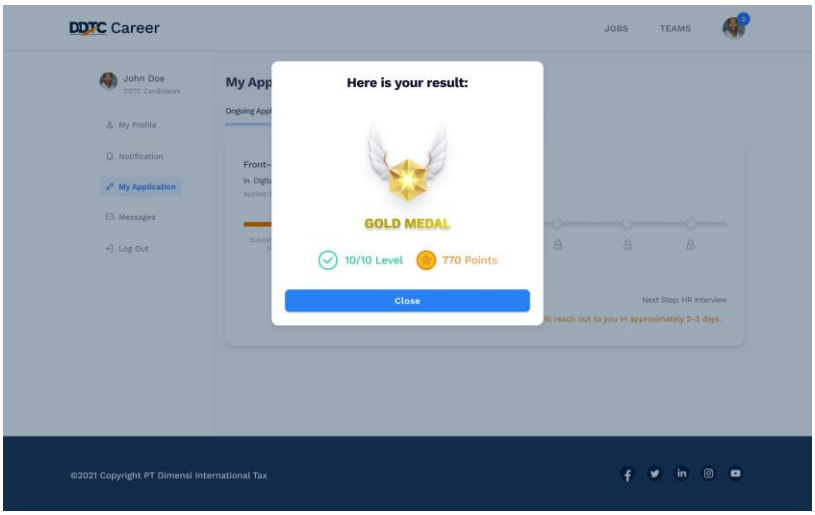

Figure 8. Result

Gamification in this research acts as an initial step of hiring (pre-hiring) that can help the HR staff choose which applicants will move on to the next level. Candidates return to the following recruiting procedure when the session is over.

The next stage is to put the gamification efforts to the test. The researcher polled recruiters and applicants for their feedback on the gamification design. The researcher used the Think Aloud technique, in which participants express their opinions after experimenting with a gamification prototype. The table below displays the findings.

Tabel 7. Evaluation Summary

No	Topic	Perspective	Description	Statement
1	User interface	Candidate	The gamification design is visually attractive and enjoyable	Positive
2	User experience	Candidate	The gamification design appears to have good user experience	Positive
3	Game Element	Candidate	Game elements chosen are suitable for the player of the gamification	Positive
4	Gamification Challenges	Candidate	Before the gamification process begins, there is	Improvement

			no precise briefing on the subject that will be the focus of the questions.	
5	Gamification Question	Candidate	Consider asking questions that are specific to the company's everyday operations rather than generic inquiries about programming languages.	Improvement
6	Gamification Idea	Recruiter	The gamification session's quantitative results are quite helpful in classifying prospects.	Positive
7	Implemen-tation	Recruiter	Apply gamification in other positions as well	Positive
8	Time Needed	Recruiter	Reduce levels in gamification sessions to shorten recruiting durations as necessary.	Improvement

When gamification sessions have been extensively applied in all employee jobs, it is envisaged that recruiters will be able to quickly locate the best prospects for each position in the future. It is intended that by doing so, the suitable staff would be able to do the task without difficulty, hence improving corporate performance. Employees who work to their strengths will undoubtedly feel more at ease at work, as demonstrated in Figure 9.

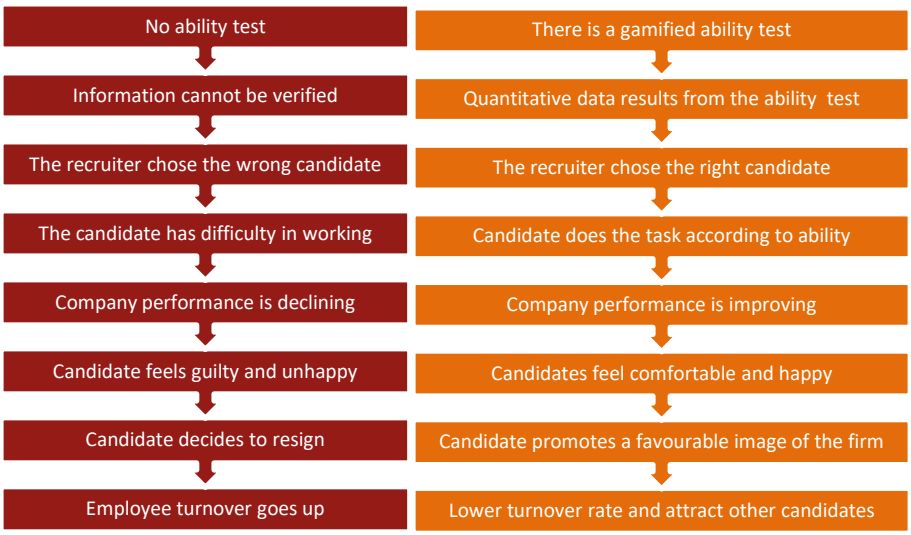

Figure 9. Before vs After Gamification

4. CONCLUSION

In this study, researchers applied gamification to company's pre-recruitment process based on the MDE (Mechanics-Dynamics, Emotions) framework. Based on the results of the analysis, the researcher uses four gamification elements that are suitable for the *Achievers* and *Killers* player types to support the candidate's experience: *Point*, *Level*, *Badge*, and *Challenge*. The results of the gamification design were then evaluated using a qualitative approach, Think-Aloud evaluation. Based on the evaluation results, researchers received positive feedbacks. All interviewees, both recruiters and candidate representatives agreed that the gamification design can help them achieve their goals in a better way than before. The application of gamification makes the recruitment process more attractive for candidates and helps the HR team in assessing the abilities and potential of candidates more accurately.

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